

A P P E N D I X F

REVISED GENERAL PLAN UPDATE CIRCULATION ELEMENT TECHNICAL REPORT

CITY OF NATIONAL CITY GENERAL PLAN UPDATE CIRCULATION ELEMENT TECHNICAL REPORT



Prepared for:

City of National City

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Ref: OC09-0145

January 2011



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1. INTRODUCTION

1.1 REPORT OVERVIEW AND PURPOSE

The Circulation Element of the General Plan provides a future vision and key direction for achieving the development of a truly multi-modal transportation system serving all the citizens of the City of National City. The current Circulation Element for the City of National City was prepared in 1996 and has been the subject of various modifications over the years. The current update effort provides the opportunity to review past accomplishments and refocus efforts to effectively plan a balanced transportation system.

The two main purposes of the Circulation Element Update are (1) to set forth goals, policies and strategies that promote effective, safe, and efficient use of existing transportation facilities and the development of new facilities; as well as (2) to document the technical process and analytical efforts undertaken to support the Update.

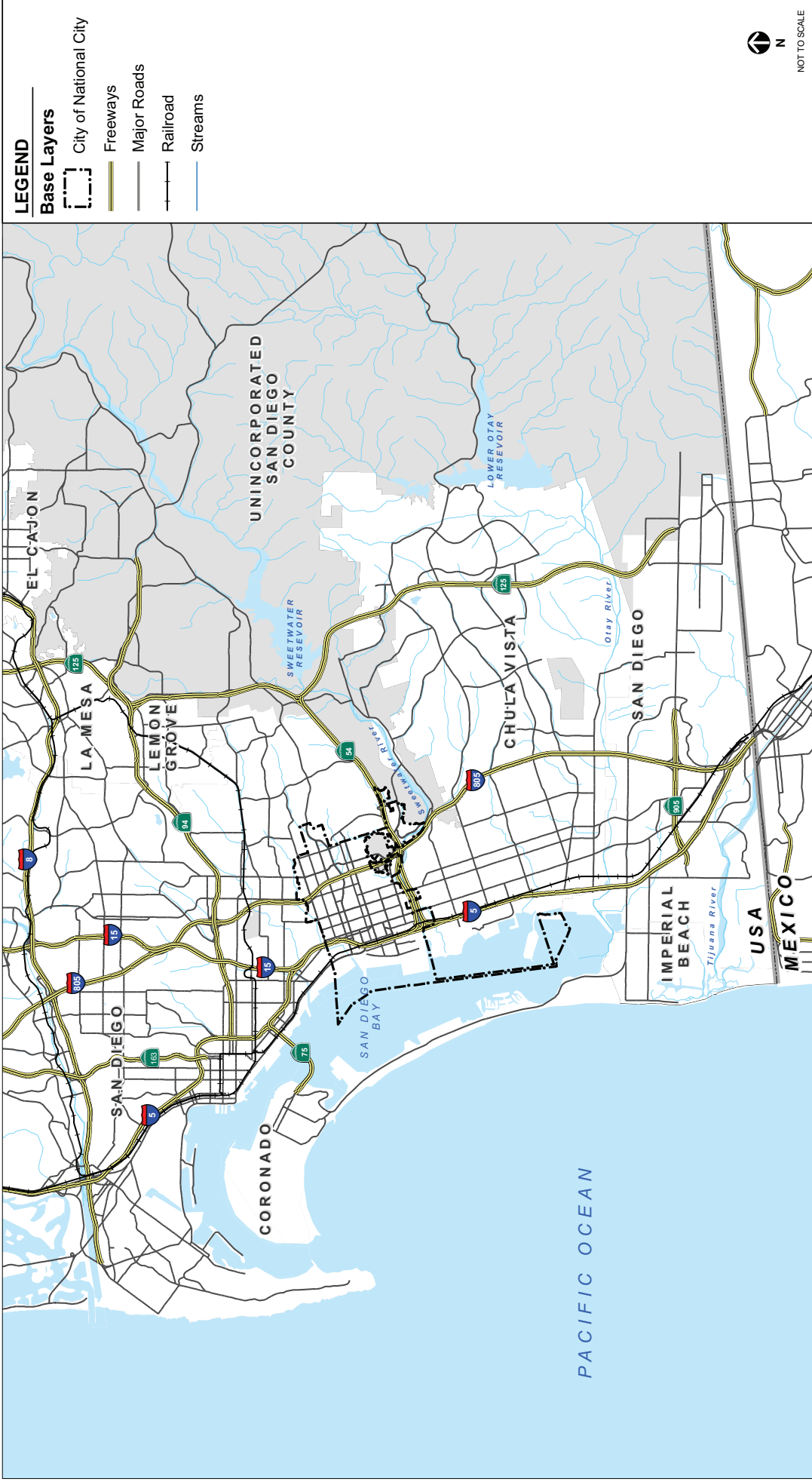
This Element seeks to assure that the City's circulation system provides for the effective movement of people and goods in and around the City while giving strong consideration to non single-occupant-vehicle (SOV) forms of transportation including bikes, pedestrians and transit. To achieve this, the Circulation Element utilizes a multi-modal/whole-systems approach to circulation planning.

1.2 REPORT ORGANIZATION

Following this Introduction chapter, this report is organized into the following sections:

- 2.0 Traffic Modeling and Forecasting – This chapter discusses in general terms, the travel demand forecast modeling process, and the process utilized to calibrate and validate the SANDAG Series 11 Southbay III base year 2003 traffic model for the City of National City.
- 3.0 Roadway Functional Classifications and Level of Service Standards – This chapter presents the recommended Circulation Element roadway functional classifications and Level of Service (LOS) standards.
- 4.0 Existing Conditions – This chapter describes the existing transportation network and provides an overview of existing operating conditions for all modes of transportation.
- 5.0 Circulation Element Goals and Policies – Consistent with the vision of the General Plan Update, this chapter describes the goals and policies developed for the Circulation Element.
- 6.0 Future Year 2030 Conditions – This chapter describes projected long-range roadway traffic conditions in the City of National City, under both the currently adapted and proposed General Plan Circulation Elements. Discussions on improving non-motorized and transit modes of transportation are provided as well.

Figure 1-1 shows the regional location, and **Figure 1-2** shows the city boundary and sphere of influence.





2. TRAFFIC MODELING AND FORECASTING

Traffic modeling is an essential step in the Circulation Element Update process, providing a valuable tool in the analysis of the timing and location of transportation network modifications and planned land uses within the City of National City. This chapter discusses the process utilized to calibrate and validate the base year 2003 SANDAG Series 11 Southbay III Model for use in the City of National City's Circulation Element Update. This chapter also provides an overview of the travel demand forecast modeling process.

2.1 MODEL CALIBRATION AND VALIDATION

Traffic model calibration is the process of ensuring the accuracy of the model by adjusting model parameters to reasonably replicate existing traffic volumes in the base model. The premise is that the better the traffic model replicates existing traffic volumes, the better its ability to accurately forecast future year traffic volumes. The traffic model is validated through analyses that measure the degree to which estimated traffic volumes replicate existing traffic volumes. The parameters of the validated base year model are then utilized with future land use and transportation network information to forecast 2030 traffic volumes.

2.1.1 Calibration Process

The Southbay III Traffic Model was developed as a focused model utilizing the SANDAG Regional Transportation Model, with additional land use and roadway network details provided for the Southbay cities of Chula Vista and National City and its sphere of influence.

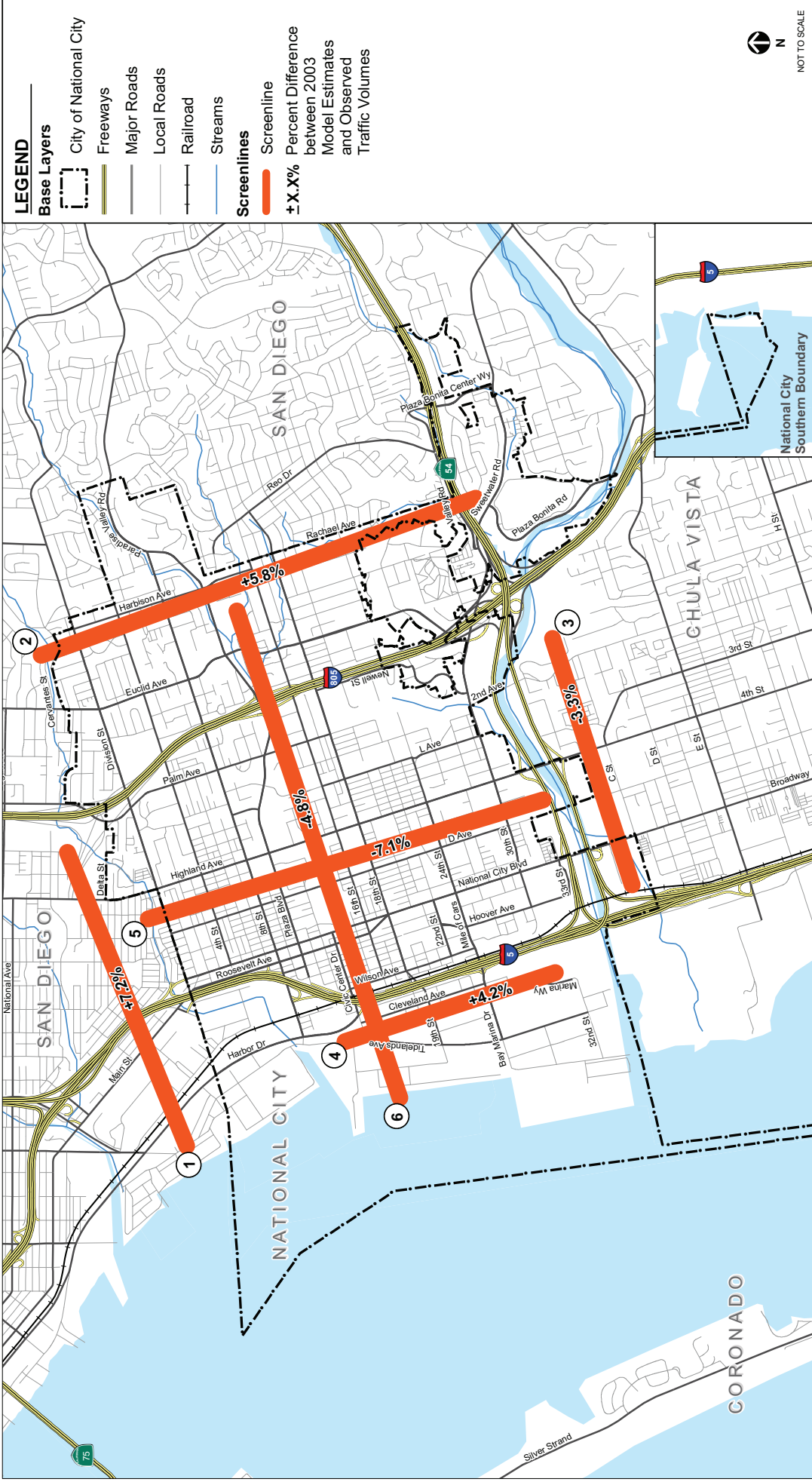
Model calibration entails running a base year transportation model and assessing the degree to which estimated traffic volumes replicate existing traffic volumes. The model parameters are then adjusted and the model is rerun until the model-estimated traffic volumes closely replicate observed traffic counts. Calibration of the Southbay III base year required eight (8) iterations of the model, including refinements and adjustments to centroid connectors (to better reflect the local street network), TAZ loadings, roadway speeds, and trip distribution parameters.

2.1.2 Validation Process and Results

The model validation process consists of testing the estimated base year model output against actual traffic counts. If the traffic model is able to replicate actual traffic counts within an acceptable level of accuracy, the traffic model is considered "validated". After the model is validated, model parameters are utilized in conjunction with future year land uses and transportation network to forecast future traffic volumes.

Screenline analyses were employed to assess the similarity between estimated and observed traffic volumes within the City of National City. Screenline analysis entails aggregating traffic volumes on parallel roadways to capture the magnitude of travel demands in a particular direction across the study area network. The modeled screenline traffic volumes are compared to the actual screenline traffic volumes to measure the degree to which modeled volumes replicated actual traffic volumes. Based upon local and national standards, transportation model validation is typically considered to be accomplished when the model estimated screenline traffic volumes are within $\pm 10\%$ of the observed screenline traffic volumes.

Six (6) screenlines were established to capture the major travel flows within and in/out of the City of National City. **Figure 2-1** displays the screenline locations utilized to validate the City of National City base year 2003 traffic model.



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SCREENLINE ANALYSIS
FIGURE 2-1

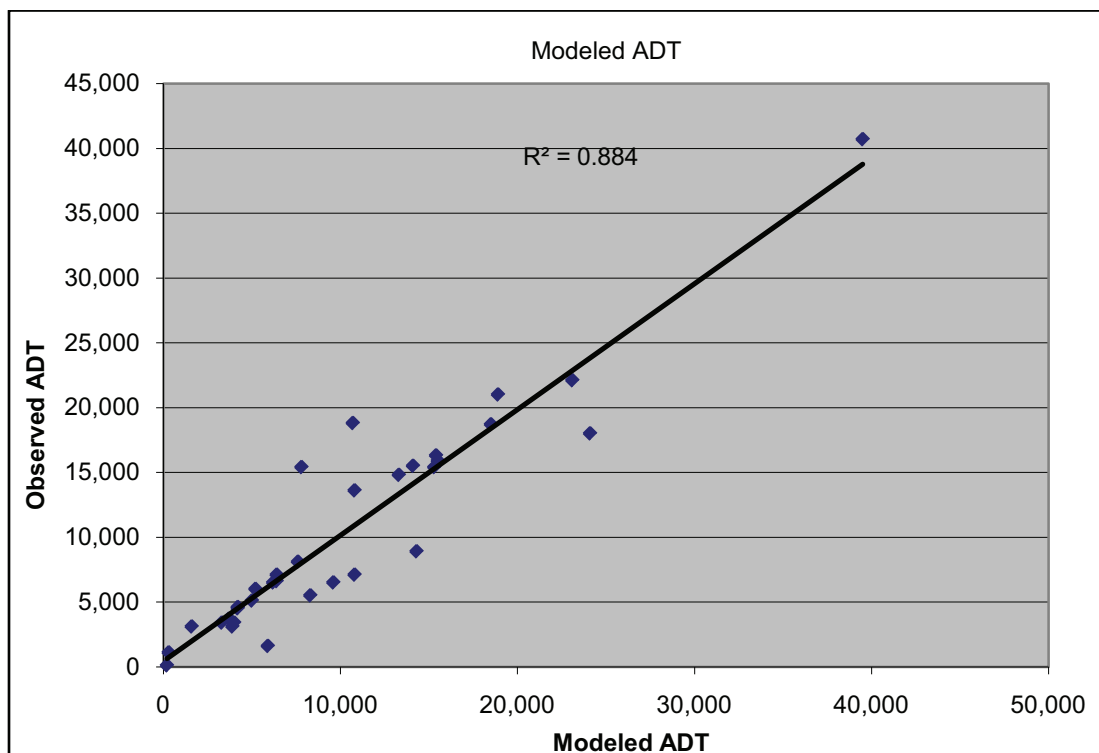
Table 2.1 summarizes the comparison of observed and modeled traffic volumes by screenline. On average, modeled screenline traffic volumes were within 7.2% of observed volumes, indicating a relatively strong level of accuracy.

TABLE 2.1: NATIONAL CITY ROADWAY CIRCULATION ELEMENT UPDATE TRAFFIC MODEL VALIDATION				
Screenline	Observed ADT	Model Estimated ADT	Different	Percent Difference
1	53,100	56,900	3,800	7.2%
2	69,100	73,100	4,000	5.8%
3	68,800	66,500	-2,300	-3.3%
4	11,800	12,300	500	4.2%
5	91,600	85,100	-6,500	-7.1%
6	66,300	63,100	-3,200	-4.8%

Source: Fehr & Peers; September 2010

As a supporting analysis, a scatter-point diagram was developed to show the relationship between estimated and observed screenline traffic volumes. **Figure 2-2** displays the scatter-point diagram of estimated and observed screenline traffic volumes and the best fit line correlating the two set of volumes (observed and modeled). The diagram indicates that a strong correlation exists between the observed and modeled traffic volumes; a further indication that the base year 2003 model provides a consistent level of accuracy.

Figure 2-2 Scatter-Point Diagram of Modeled and Observed Traffic Volumes



It should be further noted that SANDAG typically develops and applies roadway link adjustment factors based on the difference between the final estimated volumes for the base year 2003 model and the observed traffic counts. These adjustment factors are then applied to the forecast year 2030 traffic volumes, further counteracting any remaining modeling error.

2.2 TRAVEL DEMAND MODELING PROCESS

Regional traffic models consist of two primary components – the transportation network or the “supply” of transportation services, and land development which creates the “demand” for travel. Transportation modeling traditionally follows a four-step process, consisting of trip generation, trip distribution, mode choice, and trip assignment, as described below:

1. *Trip Generation* – Estimates the number of trips that are generated by and attracted to each traffic analysis zone (TAZ) on an average weekday for each forecast year.
2. *Trip Distribution* – Connects trip ends to one another to create a flow of trips between TAZs within the study area. A gravity-based model is typically utilized to estimate zone-to-zone trip making. The gravity-based model postulates that the number of trips from one zone to another is a function of the level of activity in each zone and the distance between zones. For example, zones that are close to one another and contain high levels of activity (i.e. high intensity of land uses) would have a relatively high level of traffic flowing between them.
3. *Mode Choice* – Determines the number of travelers that would utilize each particular mode of travel available to them, such as automobile, bus, light rail, bicycle, and walking. Mode choice is typically considered to be a function of the relative levels of service (travel times) provided by each mode or a combination of modes of travel, and of the socio-economic characteristics of the traveler.
4. *Trip Assignment* – Assigns zone-to-zone trip flows to the roadway network based on minimum travel times, including assignment of vehicle trips to roadway networks and transit trips to transit networks. A capacity-restrained equilibrium model is typically utilized to allow for consideration of roadway congestion.

One of the primary final products of the four-step modeling process is the average daily traffic (ADT) volumes on the study area network by roadway segment. ADT forecasts for the year 2030 as derived from the Southbay III traffic model provided the basis for the proposed roadway network as part of the Circulation Element update.

3. ROADWAY FUNCTIONAL CLASSIFICATIONS AND LEVEL OF SERVICE STANDARDS

As a key component of the Circulation Element Update, a set of roadway functional classifications were utilized for the City of National City to ensure that roadway characteristics and design attributes properly reflect the desired character of the City, while also providing for acceptable traffic operations. This chapter summarizes the roadway functional classifications and associated Level of Service (LOS) standards used in updating National City's Circulation Element.

3.1 ROADWAY FUNCTIONAL CLASSIFICATIONS

The City of National City's roadway system includes a range of facilities including freeways, arterials, collectors and local roads. Two major functions of a roadway are to serve through traffic and provide access to adjacent property, and different roadways prioritize these two functions differently. For instance, arterials, which mostly consist of the bigger roadways, generally prioritize the movement of traffic over access to individual adjacent properties, while local streets, which mostly consist of smaller roadways, prioritize access to private properties over through traffic. Roadways are also intended to provide bicycle and pedestrian access and circulation, and as such form the backbone of the bicycle and pedestrian network.

The following functional classifications were utilized for the City of National City Circulation Element roadways:

- Freeway:** A state-designated, high-speed, high capacity route that serves statewide and interregional transportation needs. Freeways have limited direct access and are generally two or more lanes in each direction, separated by a raised median or buffer. There are three freeways that run through National City: Interstate 5, Interstate 805, and State Route 54.
- Arterial:** Arterials are intended to carry greater than 20,000 vehicles per day, providing circulation across the City and access to major destination points throughout the region. Arterials are usually comprised of 4 to 6 travel lanes, often with synchronized traffic signals to improve traffic flow and travel time. Arterials typically include medians or center turn lanes to provide access control. There are a total of 16 arterial roadways within National City.
- Collector:** Collectors are intended to "collect" traffic from local roadways and carry it to roadways higher in the street classification hierarchy. These roadways serve as intermediaries between arterials and local roads, providing direct access to parcels in both residential and non-residential areas. Collectors typically have one or two lanes of traffic in each direction and can carry up to 20,000 vehicles on a daily basis. Collectors may serve as alternate routes to arterials for movement across the City. There are a total of 28 collector roadways within National City.
- Local:** Local streets are intended to serve adjacent properties and enhance local connectivity, providing direct access to properties and connections to collectors and arterials. Local streets typically carry less than 5,000 vehicles per day. Speed limits on local streets do not exceed 25 miles per hour (mph). Local streets typically consist of two driving lanes. Alleys are a subset of the local street network, providing direct access to local residences and businesses. Parking is prohibited in alleys to allow access for emergency response vehicles, waste management and utility services, and adjacent property owners. Due to

their large number, local streets (which include alleys) are not specifically addressed in this document, but are recognized as part of this Circulation Element Update.

3.2 LEVEL OF SERVICE STANDARDS

The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as delay, speed, travel time, freedom to maneuver, interruptions in traffic flow, queuing, comfort, and convenience. **Table 3.1** describes generalized definitions of the various LOS categories (A through F) as applied to roadway operations.

TABLE 3.1: LEVEL OF SERVICE DEFINITIONS	
LOS Category	Definition of Operation
A	This LOS represents a completely free-flow condition, where the operation of vehicles is virtually unaffected by the presence of other vehicles and only constrained by the geometric features of the highway and by driver preferences.
B	This LOS represents a relatively free-flow condition, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.
C	At this LOS the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles.
D	At this LOS, the ability to maneuver is notably restricted due to traffic congestion, and only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	This LOS represents operations at or near capacity. LOS E is an unstable level, with vehicles operating with minimum spacing for maintaining uniform flow. At LOS E, disruptions cannot be dissipated readily thus causing deterioration down to LOS F.
F	At this LOS, forced or breakdown of traffic flow occurs, although operations appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.
Source: Highway Capacity Manual 2000	

In general, a LOS of C or better is accepted as the design standard for a roadway and LOS D is considered as an acceptable LOS. LOS E and F represent significant levels of congestion and are generally not acceptable. However, there may be situations in which LOS E or F may be acceptable where the goal is to promote other modes of transportation, such as walking, bicycling, and transit, or to calm traffic.

National City has developed a methodology for classifying Level of Service by street classification. These classifications, shown in **Table 3.2**, were developed based on background knowledge of the City's roadway network, coordination with City staff, and with reference to the San Diego Traffic Engineers' Council (SANTEC) and Institute of Transportation Engineers (ITE) guidelines.

**TABLE 3.2:
CIRCULATION ELEMENT ROADWAY CLASSIFICATIONS
CAPACITY AND LEVEL OF SERVICE STANDARDS**

Street Classification	Lanes	Level of Service*					
		A	B	C	D	E	F
Arterial	6	0-20,000	20,001-28,000	28,001-40,000	40,001-45,000	45,001-40,000	50,001+
Arterial	4	0-15,000	15,001-21,000	21,001-30,000	30,001-35,000	35,001-40,000	40,001+
Arterial	4	0-10,000	10,001-14,000	14,001-20,000	20,001-25,000	25,001-30,000	30,001+
Arterial	3+1	0-8,500	8,501-12,000	12,001-17,000	17,001-21,000	21,001-25,000	25,001+
Collector	4	0-7,000	7,001-10,000	10,001-14,000	14,001-17,000	17,001-20,000	20,001+
Collector	2+1	0-5,000	5,001-7,000	7,001-10,000	10,001-13,000	13,001-15,000	15,001+
Collector	2	0-4,000	4,001-5,500	5,501-7,500	7,501-9,000	9,001-10,000	10,001+

* Approximate recommended Average Daily Traffic based upon SANTEC Guidelines, as amended by the City of National City.

Average Daily Traffic (ADT) volumes are used at a planning level to provide a preliminary estimate of traffic operations for roadways in the planning area. Level of service classifications for National City roadways are accompanied by ADT volumes set according to street classification as shown in the table above.

4. EXISTING CONDITIONS

This chapter presents the physical and operational conditions of the existing circulation network in the City of National City, including an evaluation of non-motorized facilities, roadways, parking, public transit, and freight systems within the City. This chapter also describes key terms and methodologies that explain the current conditions and the identified deficiencies in National City's transportation system, along with the regulatory framework affecting transportation in the City. This information was used in determining changes to existing policies and development of new policies regarding mobility in the City's General Plan Update.

The City of National City lies in the County of San Diego and shares jurisdictional boundaries with the City of San Diego to the north; the unincorporated County of San Diego to the east; and the City of Chula Vista to the south. Major highways, such as State Route 54, Interstate 5, and Interstate 805 provide a high level of regional accessibility between the City of National City and other locations across the County. The transportation system in National City is comprised of diverse elements including an extensive roadway system; public transit including bus and light rail transit; bike and pedestrian facilities; and freight systems. Each of these elements is discussed below in greater detail.

4.1 BICYCLE FACILITIES

Bicycling is considered an environmentally friendly mode of transportation that enhances both personal and social well being. It is also an important travel mode as part of a seamless transportation system that includes other modes of transportation, such as transit and walking. In addition to transportation, this mode of travel provides many public access, health and economic benefits.

Bicycling is recognized as an integral component of National City's transportation system, currently and in the future. Safe, convenient, attractive, and well-designed bicycle facilities are essential if this mode is to be properly accommodated and encouraged. Well-designed bicycle facilities are safe, attractive, convenient, and easy to use. Inadequate facilities discourage users and unnecessary facilities waste money and resources.

The bicycle system in National City includes a variety of bicycle facilities, as shown in **Figure 4-1**. These facilities include dedicated off-street bicycle paths and on-street bicycle facilities designated by signage or striping on the roadway.



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EXISTING BICYCLE FACILITIES
FIGURE 4-1

National City describes current bicycle facilities, categorized by three distinct bikeway classifications, as defined by Chapter 1000 “Bikeway Planning and Design” of the California Highway Design Manual:

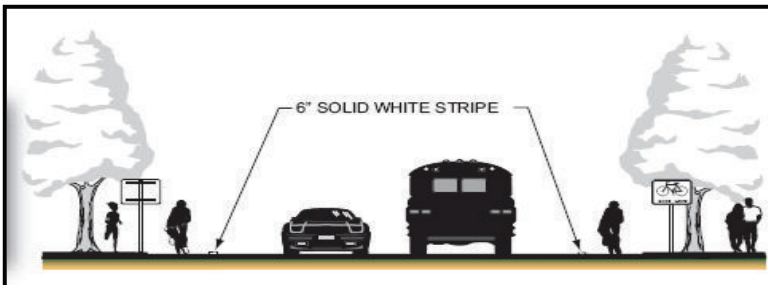
1. **Class I Bike Paths** also termed shared-use or multi-use paths, include paved right-of-way completely separated from an adjacent street or highway for the exclusive use of bicyclists, pedestrians, and those using non-motorized modes of travel. National City currently has 2.4 miles of Class I bike paths, including portions of the Bayshore Bikeway and the Sweetwater River Bikeway.

The Bayshore Bikeway is a 26-mile long regional facility that encircles San Diego Bay, passing through the planning area in National City along Harbor Drive, Tideland Avenue, and W. 32nd Street, and providing a link to the nearby cities of San Diego, Coronado, Imperial Beach, and Chula Vista. Its first stage was built in 1976, as part of National City's \$50,000 transportation development allocation from SANDAG to widen the Chollas Creek Bridge. In addition to recreational and coastal access opportunities, the facility provides alternative transportation options to many industrial and military jobs that are located along the bikeway.

The Sweetwater River Bikeway is located along the southern border of National City, passing through portions of Chula Vista and the County of San Diego. The facility runs parallel to State Route 54 and the Sweetwater River Flood Control Channel connecting to the Bayshore Bikeway at W. 32nd Street near the Gordy Shields Bridge.

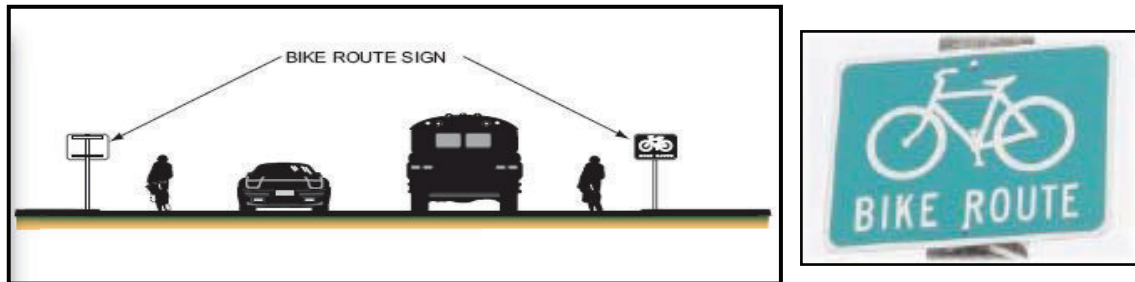


2. **Class II Bike Lanes** include painted lanes, pavement markings, and signage for one-way travel on a street or highway for exclusive or preferential bicycle travel. National City currently has 1.7 miles of Class II bike lanes, including portions of Plaza Bonita Road, Bay Marina Drive, Coolidge Avenue and Hoover Avenue (located in the Kimball neighborhood).



3. **Class III Bike Routes** provide shared use with motor vehicle traffic, identified by signage only. “Shared Lane” pavement markings may also be used. While the San Diego Regional Bicycle

Plan identifies approximately 20 miles of Class III bike routes in National City, only 0.6 miles are currently signed.



The City of National City is currently preparing a Bicycle Master Plan, which will identify a well connected bicycle network, prioritize the unbuilt portions and make recommendations for public education and encouragement programs. Typical improvements will include gap closures for Class I bikeways, expansion of Class II and III bikeways, special treatments at intersections, and bicycle parking and support facilities.

4.2 PEDESTRIAN FACILITIES

Walking is another environmentally friendly mode of transportation that enhances both personal and social well being. In addition to transportation, this mode of travel provides many public access, health and economic benefits. Walking is recognized as an integral component of National City's transportation system. Safe, convenient, attractive, and well-designed pedestrian facilities are essential if this mode is to be properly accommodated and encouraged.

Pedestrian circulation is particularly important because, as noted previously, approximately 7.4 percent of owner-occupied households and 24.4 percent of renter-occupied households in National City do not own a motor vehicle (US Census Bureau, Census 2000 Summary File 3-SF3). Since National City is comprised of a traditional grid network of roads and adjacent sidewalk facilities, pedestrians have a variety of routes connecting residences to shopping districts, employment centers, transit facilities, schools, and parks. Currently, streetscape and traffic calming enhancements are scheduled to be implemented through capital improvement projects to enhance safety and mobility for pedestrians within the City.

Safe Routes to School is an important program which is being implemented across the City. The program's primary objective is to create safe and accessible walking corridors between schools and the feeder neighborhoods. It aims to encourage and increase the number of children who walk to school through public outreach and education. Increased walking rewards citizens by reducing the health risks associated with traffic congestion, air pollution, and childhood obesity and diabetes. The program also intends to strengthen partnerships between the City, schools, local businesses, community groups, parents, and residents of National City. Implementation has begun and will continue with the installation of traffic safety enhancements such as flashing warning beacons, radar speed feedback signs, pedestrian countdown signals at intersections, in road lights, pedestrian refuge islands & curb extensions at crosswalks, sidewalk gap closures, ADA upgrades to curb ramps, and enhanced signage and striping.

4.3 ROADWAYS NETWORK

Circulation Element Roadway Description

This section describes the key roadways comprising the vehicular circulation system, in terms of north-south roadways, then east-west roadways.

North-South Roadways

Harbor Drive is a north-south Arterial with four travel lanes extending from Division Street south to Civic Center Drive. Current average daily traffic volumes range from 13,000 to 18,000 with a posted speed limit of 45 mph.

Tidelands Avenue is a north-south Collector with two travel lanes extending from Civic Center Drive south to W. 32nd Street. Current average daily traffic volumes range from 1,900 to 2,500 with posted speeds ranging from 35 mph to 40 mph.

Marina Way is a north-south Collector with two travel lanes extending from Bay Marina Drive south to W. 32nd Street. The current average daily traffic volume is 1,700 with a posted speed limit of 25 mph. Speed humps with 15 mph warning signs are present along much of Marina Way.

Cleveland Avenue is a north-south Collector with two travel lanes extending from Civic Center Drive south to Bay Marina Drive. Current average daily traffic volumes range from 3,600 to 4,000 with a posted speed limit of 35 mph.

Wilson Avenue is a north-south Collector with two travel lanes extending from Civic Center Drive south to W. 22nd Street. Current average daily traffic volumes range from 2,800 to 3,200 with a posted speed limit of 35 mph. Wilson Avenue, just south of W. 22nd Street, is currently a one lane (northbound only) facility which carries approximately 2,200 average daily traffic.

Hoover Avenue is a north-south Collector with two travel lanes between W. 8th Street and W. 18th Street, carrying an average daily traffic of 1,600 with a posted speed limit of 30 mph. From W. 22nd Street to W. 30th Street, Hoover Avenue is a four lane collector with average daily traffic volumes ranging from 3,000 on the north end to 10,900 further south with a posted speed limit of 30 mph. Finally, from W. 30th Street to W. 33rd Street, Hoover Avenue is a two-lane Collector carrying an average daily traffic of 1,800 with a posted speed limit of 30 mph.

Roosevelt Avenue is a north-south Collector with two travel lanes extending from Division Street south to W. 16th Street. Current average daily traffic volumes range from 2,600 to 4,700 with a posted speed limit of 30 mph.

West Avenue is a north-south Collector with two travel lanes between W. 16th Street and W. 18th Street. The current average daily traffic volume is 2,600 with a posted speed limit of 30 mph.

National City Boulevard is a north-south Arterial with four travel lanes extending from Division Street south across SR-54 to W. 35th Street. Current average daily traffic volumes range from 12,900 to 17,800 with posted speed limits ranging from 30 mph to 35 mph.

D Avenue is a north-south Collector with two travel lanes extending from Division Street south to W. 30th Street. Current average daily traffic volumes range from 3,200 to 7,200 with posted speed limits ranging from 30 mph to 35 mph.

Highland Avenue is a north-south Arterial with four travel lanes extending from Delta Street south to SR-54. Current average daily traffic volumes range from 14,100 to 21,200 with a posted speed limit of 35 mph.

L Avenue is a north-south Collector with two travel lanes extending from E. 8th Street south to E. 30th Street. Current average daily traffic volumes range from 2,600 to 4,300 with a posted speed limit of 35 mph.

Palm Avenue is a north-south Arterial with four travel lanes between I-805 and Division Street. The current average daily traffic volume is 16,800 with a posted speed limit of 40 mph. Between Division

Street and E. 18th Street, Palm Avenue is a two-lane Collector with average daily traffic volumes ranging from 7,600 to 12,800 with a posted speed limit of 35 mph.

Newell Street is a north-south Collector with two travel lanes extending from E. 18th Street south to Prospect Street. The current average daily traffic volume is 2,100 with a posted speed limit of 35 mph.

Grove Street is a north-south Collector with two travel lanes extending from Prospect Street south to Sweetwater Road. The current average daily traffic volume is 2,400 with a posted speed limit of 25 mph.

Euclid Avenue is a four-lane Arterial extending from Cervantes Avenue south to Sweetwater Road. The current average daily traffic volumes range between 8,800 and 15,500 with a posted speed limit of 35 mph.

Harbison Avenue is a north-south Collector with two travel lanes extending from Division Street south to E. 8th Street. Current average daily traffic volumes range from 3,400 to 4,000 with a posted speed limit of 30 mph. From E. 8th Street to Plaza Boulevard, Harbison Avenue is a four-lane Collector with an average daily traffic volume of 6,500 and a posted speed limit of 30 mph. Finally, from Plaza Boulevard to 16th Street, Harbison Avenue is a two-lane Collector with an average daily traffic volume of 5,300 and a posted speed limit of 30 mph.

Plaza Bonita Road is a four-lane Arterial extending from Sweetwater Road south to Bonita Mesa Road. The current average daily traffic volume is 9,000 with a posted speed limit 45 mph.

Plaza Bonita Center Way is a four-lane Arterial extending from SR-54 south to Sweetwater Road. The current average daily traffic volume is 17,100 with a posted speed limit 45 mph.

East-West Roadways

Division Street is a three/two-lane Collector extending from National City Boulevard east to Highland Avenue. Current average daily traffic volumes range between 8,400 and 10,800 with a posted speed limit of 35 mph. From Highland Avenue east to Harbison Avenue, Division Street is a four-lane Arterial with average daily traffic volumes ranging between 10,400 and 17,100 and a posted speed limit of 35 mph.

4th Street is a two-lane Collector extending from National City Boulevard east to Harbison Avenue. Current average daily traffic volumes range from 3,700 to 8,300 with a posted speed limit of 35 mph.

8th Street is a four-lane Arterial extending from Harbor Drive east to Plaza Boulevard. Between Harbor Drive and National City Boulevard, the current average daily traffic volumes range from 10,000 to 22,500 with a posted speed limit of 35 mph; between National City Boulevard and Highland Avenue, the current average daily traffic volumes range from 11,000 to 15,600 with a posted speed limit of 35 mph; between Highland Avenue and Palm Avenue, the current average daily traffic volume is 17,500 with a posted speed limit of 40 mph; and between Palm Avenue and Paradise Valley Road, the current average daily traffic volumes range from 14,200 to 18,100 with a posted speed limit of 35 mph.

Plaza Boulevard is a one-lane (eastbound) Collector between Coolidge Avenue and Hoover Avenue with a current average daily traffic volume of 3,500 and a posted speed limit of 35 mph. Between Hoover Avenue and National City Boulevard, Plaza Boulevard is a four-lane Collector with an average daily traffic volume of 4,800 and a posted speed limit of 35 mph. Plaza Boulevard is a four-lane Arterial extending from National City Boulevard east to Paradise Valley Road. Between National City Boulevard and Highland Avenue, the current average daily traffic volumes range from 8,100 to 10,200 with a posted speed limit of 35 mph; between Highland Avenue and Euclid Avenue, the current average daily traffic volumes range from 17,300 to 31,200 with a posted speed limit of 35 mph; and between Euclid Avenue and Paradise Valley Road, the current average daily traffic volumes range from 17,300 to 22,500 with posted speed limits range from 35 mph to 40 mph.

Paradise Valley Road is a four-lane Arterial extending from E. 8th Street east to Plaza Entrada. The current average daily traffic volume is 27,500 with a posted speed limit of 40 mph.

Civic Center Drive is a two-lane Collector extending from Harbor Drive east to National City Boulevard. Current average daily traffic volumes range from 6,100 to 7,000 with a posted speed limit of 30 mph.

16th Street is a two-lane Collector between Wilson Avenue and National City Boulevard with an average daily traffic volume of 2,400 and a posted speed limit of 35 mph. Between National City Boulevard and Highland Avenue, 16th Street is a four-lane Collector with average daily traffic volumes range from 4,800 to 6,600 and a posted speed limit of 35 mph. Finally, 16th Street is a two-lane Collector between Highland Avenue and Harbison Avenue with average daily traffic volumes of 6,600 to 7,800 and a posted speed limit of 35 mph.

18th Street is a two-lane Collector extending from Wilson Avenue east to Rachael Avenue. Average daily traffic volumes range between 4,400 and 9,800 with posted speed limits range from 30 mph to 35 mph.

19th Street is a four-lane Collector extending from Tidelands Avenue east to Wilson Avenue. The current average daily traffic volume is 2,800 with a posted speed limit of 30 mph.

Bay Marina Drive is a four-lane Collector between Tidelands Avenue and Marina Way with an average daily traffic volume of 4,200 and a posted speed limit of 35 mph. Between Marina Way and Interstate 5, Bay Marina Drive is a four-lane Arterial with average daily traffic volumes range from 4,200 to 9,400 and a posted speed limit of 35 mph.

Mile of Cars Way is a four-lane Arterial extending from Interstate 5 east to National City Boulevard. Average daily traffic volumes range from 14,200 to 19,200 with a posted speed limit of 35 mph.

22nd Street is a two-lane Collector extending from Wilson Avenue to National City Boulevard. The current average daily traffic volume is 2,400 with a posted speed limit of 30 mph.

24th Street is a four-lane Arterial extending from National City Boulevard east to Highland Avenue. Average daily traffic volumes range from 8,800 to 9,500 with a posted speed limit of 35 mph. From Highland Avenue to L Avenue, 24th Street is a two-lane Collector with an average daily traffic volume of 3,700 and posted speed limits of 35 mph.

30th Street is a four-lane Collector extending from Hoover Avenue east to National City Boulevard with an average daily traffic volume of 3,400 and a posted speed limit of 35 mph. From National City Boulevard to Highland Avenue, 30th Street is a four-lane Arterial with average daily traffic volumes range from 5,500 to 9,100 and a posted speed limit of 35 mph. Finally, from Highland Avenue to N. 2nd Avenue, 30th Street is a four-lane Arterial with average daily traffic volumes range from 18,300 to 20,600 and a posted speed limit of 40 mph.

Sweetwater Road is a four-lane Arterial extending from N. 2nd Avenue to Valley Road with average daily traffic volumes range from 21,200 to 27,000 and a posted speed limit of 45 mph. From Valley Road to Plaza Bonita Road, Sweetwater Road is a six-lane Arterial with an average daily traffic volume of 14,800 and a posted speed limit of 45 mph. From Plaza Bonita Road to Calmoor Street, Sweetwater Road is a four-lane Arterial with an average daily traffic volume of 13,600 and a posted speed limit of 45 mph. Finally, from Calmoor Street to Plaza Bonita Center Way, Sweetwater Road is currently a three-lane Collector with an average daily traffic volume of 14,700 and a posted speed limit of 45 mph.

33rd Street is a two-lane Collector extending from Hoover Avenue east to National City Boulevard. The current average daily traffic volume is 1,800 with a posted speed limit of 30 mph.

Valley Road is a two-lane Collector extending from Sweetwater Road east to Calle Abajo. The current average daily traffic volumes is 7,000 with a posted speed limit of 35 mph.

Roadway Classifications and Level of Service Analysis Results

Figure 4-2 illustrates the current roadway functional classification for each of Circulation Element facilities. The Level of Service (LOS) was calculated for key roadway segments to evaluate existing traffic conditions. **Table 4.1** displays existing Average Daily Traffic Volumes (ADT) and the results of the roadway LOS analysis, while **Figure 4-3** displays the results in a mapped format.

The following six (6) roadway segments were identified as operating at LOS E or F under existing conditions:

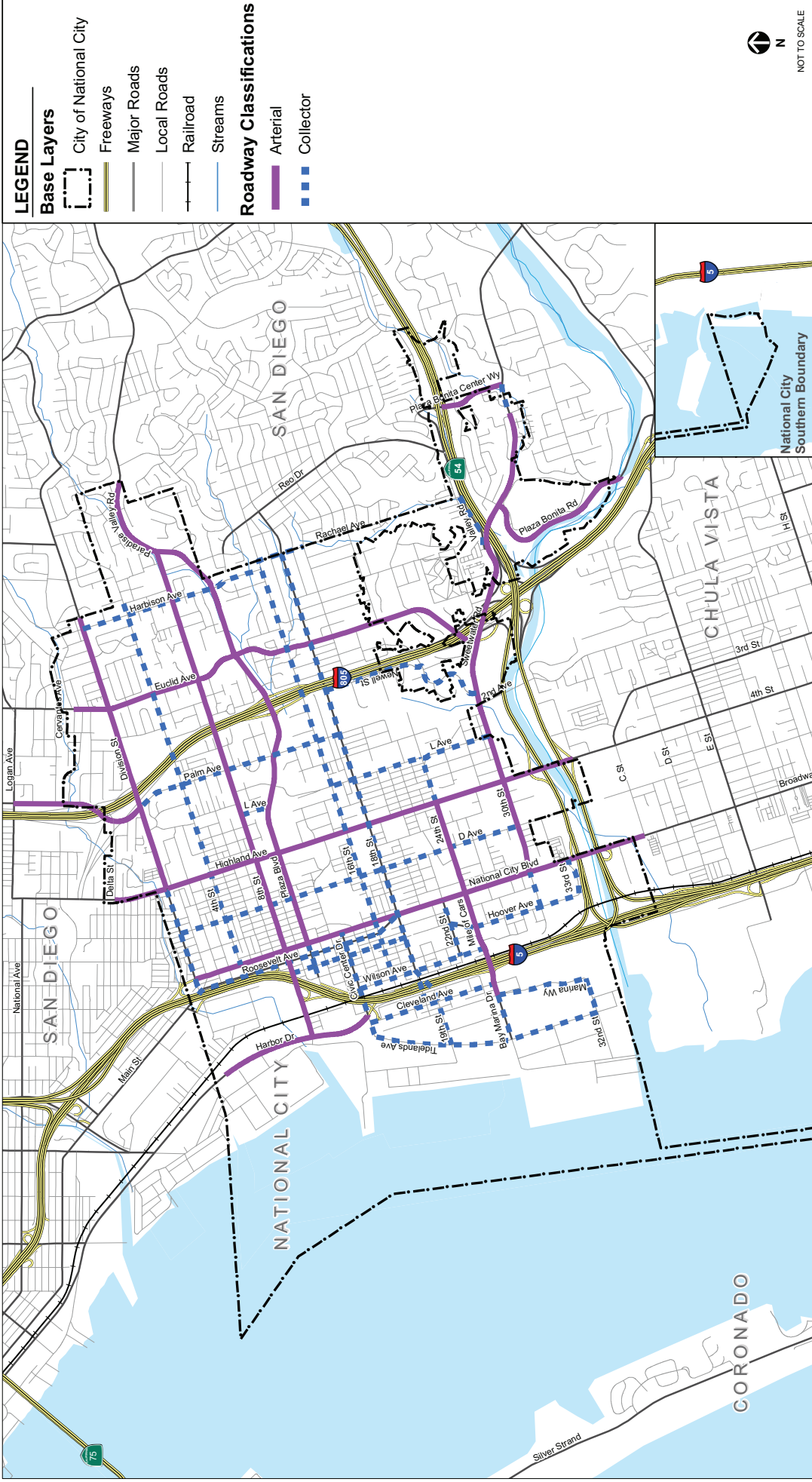
- Palm Avenue, between Division Street and 4th Street (LOS F),
- Palm Avenue, between 4th Street and 8th Street (LOS E),
- Palm Avenue, between 8th Street and Plaza Boulevard (LOS F),
- Palm Avenue, between Plaza Boulevard and 16th Street (LOS F),
- 18th Street, between L Avenue and Palm Avenue (LOS E), and
- Sweetwater Road, between Calmoor Street and Plaza Bonita Center Way (LOS E).

Parking

National City has a variety of parking options throughout the City, including on-street parking with and without time restrictions and off-street parking lots. An analysis of parking availability was conducted by the City's student fellows along arterial and collector roadways throughout National City. Parking conditions on these roadways were observed on random mid-week days during peak commute times: 7-9 AM and 4-6 PM. (**Table 4.2** displays the results of the Arterial and Collector Parking Analysis).

Based upon the analyses most arterials appear to have adequate street parking while some collector roadways were found to be near maximum capacity during these hours. Additional analysis may also be needed for local neighborhood roads in the evening hours to determine nighttime parking needs in residential areas. Through the City's Capital Improvement Program, opportunities to accommodate additional parking in residential neighborhoods through conversion of parallel on-street parking to angled parking (where right-of-way permits) is being studied.

Select neighborhood areas are defined as permit parking districts, as shown in **Figure 4-4**. Permit parking districts are designated to restrict commuters, mainly from nearby industrial shops, from depleting the on-street parking supply in residential neighborhoods. In these districts, residents may obtain an annual parking permit from the City for a fee. Time-restricted parking passes for visitors/guests are also available upon request from parking permit holders. On-street signage designates the time periods that vehicles without proper permits are prohibited to park. Parking for commercial vehicles and large trucks is restricted in residential neighborhoods other than the purpose of loading and unloading only.



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EXISTING ROADWAY CLASSIFICATIONS
FIGURE 4-2

**TABLE 4.1:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
EXISTING CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Harbor Drive	Division Street	8 th Street	Arterial	4	40,000	18,000	B
Harbor Drive	8 th Street	Civic Center Drive	Arterial	4	40,000	13,000	A
Tidelands Avenue	Civic Center Drive	19 th Street	Collector	2	10,000	2,200	A
Tidelands Avenue	19 th Street	Bay Marina Drive	Collector	2	10,000	1,900	A
Tidelands Avenue	Bay Marina Drive	32 nd Street	Collector	2	10,000	2,500	A
Marina Way	Bay Marina Drive	32 nd Street	Collector	2+1	15,000	1,700	A
Cleveland Avenue	Civic Center Drive	19 th Street	Collector	2+1	15,000	3,600	A
Cleveland Avenue	19 th Street	Bay Marina Drive	Collector	2+1	15,000	4,000	A
Wilson Avenue	Civic Center Drive	18 th Street	Collector	2	10,000	3,200	A
Wilson Avenue	18 th Street	22 nd Street	Collector	2	10,000	2,800	A
Wilson Avenue	22 nd Street	Mile of Cars Way	Collector	1	5,000	2,200	B
Hoover Avenue	8 th Street	18 th Street	Collector	2	10,000	1,600	A
Hoover Avenue	22 nd Street	Mile of Cars Way	Collector	4	20,000	3,000	A
Hoover Avenue	Miles of Cars Way	30 th Street	Collector	4	20,000	10,900	C
Hoover Avenue	30 th Street	33 rd Street	Collector	2	10,000	1,800	A
Roosevelt Avenue	Division Street	4 th Street	Collector	2	10,000	4,700	B
Roosevelt Avenue	4 th Street	8 th Street	Collector	2	10,000	4,700	B
Roosevelt Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	3,400	A
Roosevelt Avenue	Plaza Boulevard	Civic Center Drive	Collector	2	10,000	3,400	A
Roosevelt Avenue	Civic Center Drive	16 th Street	Collector	2	10,000	2,600	A
West Avenue	16 th Street	18 th Street	Collector	2	10,000	2,600	A
National City Boulevard	Division Street	4 th Street	Arterial	4	40,000	14,500	A
National City Boulevard	4 th Street	8 th Street	Arterial	4	40,000	14,500	A
National City Boulevard	8 th Street	Plaza Boulevard	Arterial	4	40,000	12,900	A

**TABLE 4.1:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
EXISTING CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
National City Boulevard	Plaza Boulevard	Civic Center Drive	Arterial	4	40,000	13,700	A
National City Boulevard	Civic Center Drive	16 th Street	Arterial	4	40,000	13,700	A
National City Boulevard	16 th Street	18 th Street	Arterial	4	40,000	13,300	A
National City Boulevard	18 th Street	22 nd Street	Arterial	4	40,000	13,300	A
National City Boulevard	22 nd Street	24 th Street	Arterial	4	40,000	13,300	A
National City Boulevard	24 th Street	30 th Street	Arterial	4	40,000	14,900	A
National City Boulevard	30 th Street	35 th Street	Arterial	4	40,000	17,800	B
D Avenue	Division Street	4 th Street	Collector	2	10,000	3,200	A
D Avenue	4 th Street	8 th Street	Collector	2	10,000	4,300	B
D Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	6,200	C
D Avenue	Plaza Boulevard	16 th Street	Collector	2	10,000	7,200	C
D Avenue	16 th Street	18 th Street	Collector	2	10,000	6,800	C
D Avenue	18 th Street	22 nd Street	Collector	2	10,000	4,900	B
D Avenue	22 nd Street	24 th Street	Collector	2	10,000	4,900	B
D Avenue	24 th Street	30 th Street	Collector	2	10,000	3,600	A
Highland Avenue	Delta Street	Division Street	Arterial	4	40,000	14,100	A
Highland Avenue	Division Street	4 th Street	Arterial	4	30,000	14,100	C
Highland Avenue	4 th Street	8 th Street	Arterial	4	30,000	14,500	C
Highland Avenue	8 th Street	Plaza Boulevard	Arterial	4	40,000	20,400	B
Highland Avenue	Plaza Boulevard	16 th Street	Arterial	4	40,000	17,500	B
Highland Avenue	16 th Street	18 th Street	Arterial	4	40,000	21,000	B
Highland Avenue	18 th Street	24 th Street	Arterial	4	30,000	17,900	C
Highland Avenue	24 th Street	30 th Street	Arterial	4	30,000	19,300	C
Highland Avenue	30 th Street	SR-54	Arterial	4	40,000	21,200	C

**TABLE 4.1:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
EXISTING CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
L Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	3,500	A
L Avenue	16 th Street	18 th Street	Collector	2	10,000	3,700	A
L Avenue	18 th Street	24 th Street	Collector	2	10,000	4,300	B
L Avenue	24 th Street	30 th Street	Collector	2	10,000	2,600	A
Palm Avenue	I-805	Division Street	Arterial	4	40,000	16,800	B
Palm Avenue	Division Street	4 th Street	Collector	2	10,000	12,800	F
Palm Avenue	4 th Street	8 th Street	Collector	2	10,000	9,200	E
Palm Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	10,700	F
Palm Avenue	Plaza Boulevard	16 th Street	Collector	2	10,000	11,400	F
Palm Avenue	16 th Street	18 th Street	Collector	2	10,000	7,600	D
Newell Street	18 th Street	Prospect Street	Collector	2	10,000	2,100	A
Grove Street	Prospect Street	Sweetwater Road	Collector	2	10,000	2,400	A
Euclid Avenue	Cervantes Avenue	Division Street	Arterial	4	30,000	10,800	B
Euclid Avenue	Division Street	4 th Street	Arterial	4	30,000	9,500	A
Euclid Avenue	4 th Street	8 th Street	Arterial	4	40,000	15,500	B
Euclid Avenue	8 th Street	Plaza Boulevard	Arterial	4	30,000	15,100	C
Euclid Avenue	Plaza Boulevard	16 th Street	Arterial	4	30,000	8,800	A
Euclid Avenue	16 th Street	18 th Street	Arterial	4	30,000	8,800	A
Euclid Avenue	18 th Street	24 th Street	Arterial	4	30,000	9,900	A
Euclid Avenue	24 th Street	Sweetwater Road	Arterial	4	30,000	9,900	A
Harbison Avenue	Division Street	4 th Street	Collector	2	10,000	4,000	A
Harbison Avenue	4 th Street	8 th Street	Collector	2	10,000	3,400	A
Harbison Avenue	8 th Street	Plaza Boulevard	Collector	4	20,000	6,500	A
Harbison Avenue	Plaza Boulevard	16 th Street	Collector	2	10,000	5,300	B
Plaza Bonita Road	Sweetwater Road	Bonita Mesa Road	Arterial	4	40,000	9,000	A
Plaza Bonita Center Way	SR-54	Sweetwater Road	Arterial	4	40,000	17,100	B
Division Street	National City Boulevard	D Avenue	Collector	2+1	15,000	10,800	D
Division Street	D Avenue	Highland Avenue	Collector	2	10,000	8,400	D
Division Street	Highland Avenue	Palm Avenue	Arterial	4	30,000	10,400	B

**TABLE 4.1:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
EXISTING CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Division Street	Palm Avenue	Euclid Avenue	Arterial	4	40,000	17,100	B
Division Street	Euclid Avenue	Harbison Avenue	Arterial	4	30,000	14,300	C
4 th Street	National City Boulevard	D Avenue	Collector	2	10,000	3,700	A
4 th Street	D Avenue	Highland Avenue	Collector	2	10,000	5,300	B
4 th Street	Highland Avenue	Palm Avenue	Collector	2	10,000	6,900	C
4 th Street	Palm Avenue	Euclid Avenue	Collector	2	10,000	8,300	D
4 th Street	Euclid Avenue	Harbison Avenue	Collector	2	10,000	6,800	C
8 th Street	Harbor Drive	I-5	Arterial	4	30,000	10,000	A
8 th Street	I-5	National City Boulevard	Arterial	4	40,000	22,500	C
8 th Street	National City Boulevard	D Avenue	Arterial	4	30,000	15,600	C
8 th Street	D Avenue	Highland Avenue	Arterial	4	30,000	11,000	B
8 th Street	Highland Avenue	Palm Avenue	Arterial	4	30,000	17,500	C
8 th Street	Palm Avenue	Euclid Avenue	Arterial	4	30,000	18,100	C
8 th Street	Euclid Avenue	Harbison Avenue	Arterial	4	30,000	14,700	C
8 th Street	Harbison Avenue	Paradise Valley Road	Arterial	4	40,000	14,200	A
Plaza Boulevard	Coolidge Avenue	Hoover Avenue	Collector	1	5,000	3,500	C
Plaza Boulevard	Hoover Avenue	National City Boulevard	Collector	4	20,000	4,800	A
Plaza Boulevard	National City Boulevard	D Avenue	Arterial	4	30,000	8,100	A
Plaza Boulevard	D Avenue	Highland Avenue	Arterial	4	30,000	10,200	B
Plaza Boulevard	Highland Avenue	Palm Avenue	Arterial	4	40,000	17,300	B
Plaza Boulevard	Palm Avenue	I-805	Arterial	4	40,000	31,200	D
Plaza Boulevard	I-805	Euclid Avenue	Arterial	4	40,000	29,800	C
Plaza Boulevard	Euclid Avenue	School Xing	Arterial	4	40,000	22,500	C
Plaza Boulevard	School Xing	Harbison Avenue	Arterial	4	30,000	22,500	D
Plaza Boulevard	Harbison Avenue	Paradise Valley Road	Arterial	4	40,000	17,300	B
Paradise Valley Road	8 th Street	Plaza Entrada	Arterial	4	40,000	27,500	C
Civic Center Drive	Harbor Drive	Wilson Avenue	Collector	2	10,000	6,100	C

**TABLE 4.1:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
EXISTING CONDITIONS**

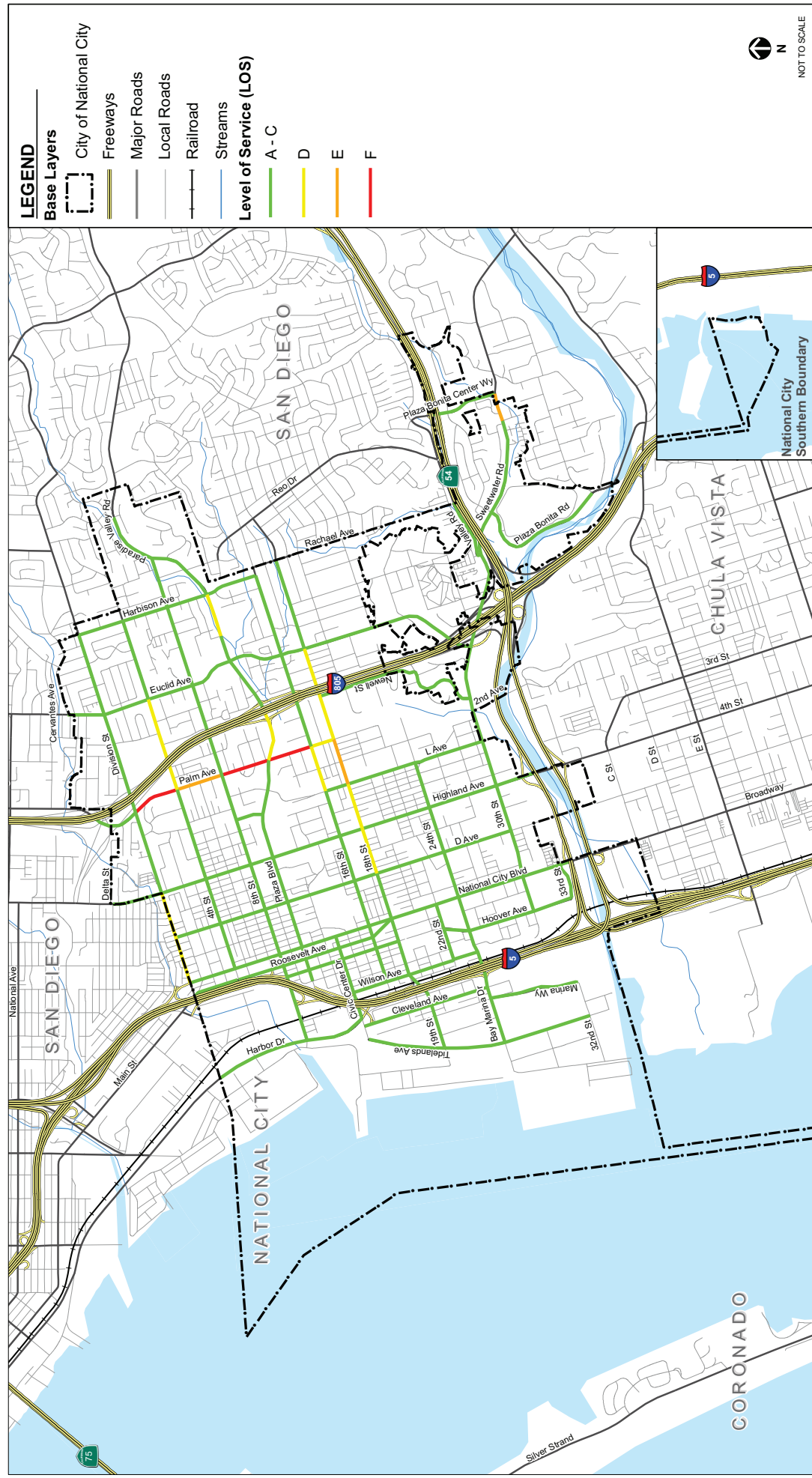
Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Civic Center Drive	Wilson Avenue	National City Boulevard	Collector	2	10,000	7,000	C
16 th Street	Wilson Avenue	National City Boulevard	Collector	2	10,000	2,400	A
16 th Street	National City Boulevard	D Avenue	Collector	4	20,000	4,800	A
16 th Street	D Avenue	Highland Avenue	Collector	4	20,000	6,600	A
16 th Street	Highland Avenue	L Avenue	Collector	2	10,000	7,300	C
16 th Street	L Avenue	Palm Avenue	Collector	2	10,000	7,800	D
16 th Street	Palm Avenue	Euclid Avenue	Collector	2	10,000	6,600	C
16 th Street	Euclid Avenue	Harbison Avenue	Collector	2	10,000	7,500	C
18 th Street	Wilson Avenue	National City Boulevard	Collector	2	10,000	4,600	B
18 th Street	National City Boulevard	D Avenue	Collector	2	10,000	6,200	C
18 th Street	D Avenue	Highland Avenue	Collector	2	10,000	8,300	D
18 th Street	Highland Avenue	L Avenue	Collector	2	10,000	8,300	D
18 th Street	L Avenue	Palm Avenue	Collector	2	10,000	9,800	E
18 th Street	Palm Avenue	Newell Street	Collector	2	10,000	8,600	D
18 th Street	Newell Street	Euclid Avenue	Collector	2	10,000	8,600	D
18 th Street	Euclid Avenue	Rachael Avenue	Collector	2	10,000	4,400	B
19 th Street	Tidelands Avenue	Wilson Avenue	Collector	4	20,000	2,800	A
22 nd Street	Wilson Avenue	Hoover Avenue	Collector	2	10,000	2,400	A
22 nd Street	Hoover Avenue	National City Boulevard	Collector	2	10,000	2,100	A
Bay Marina Drive	Tidelands Avenue	Marina Way	Collector	4	20,000	4,200	B
Bay Marina Drive	Marina Way	Cleveland Avenue	Arterial	4	30,000	4,200	A
Bay Marina Drive	Cleveland Avenue	I-5	Arterial	4	30,000	9,400	A
Mile of Cars Way	I-5	Wilson Avenue	Arterial	4	40,000	19,200	B
Mile of Cars Way	Wilson Avenue	Hoover Avenue	Arterial	4	40,000	17,000	B
Mile of Cars Way	Hoover Avenue	National City Boulevard	Arterial	4	40,000	14,200	A
24 th Street	National City	D Avenue	Arterial	4	30,000	9,500	A

**TABLE 4.1:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
EXISTING CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
	Boulevard						
24 th Street	D Avenue	Highland Avenue	Arterial	4	30,000	8,800	A
24 th Street	Highland Avenue	L Avenue	Collector	2	10,000	3,700	A
30 th Street	Hoover Avenue	National City Boulevard	Collector	4	20,000	3,400	A
30 th Street	National City Boulevard	D Avenue	Arterial	4	30,000	5,500	A
30 th Street	D Avenue	Highland Avenue	Arterial	4	30,000	9,100	A
30 th Street	Highland Avenue	L Avenue	Arterial	4	40,000	18,300	B
30 th Street	L Avenue	2 nd Avenue	Arterial	4	40,000	20,600	B
Sweetwater Road	2 nd Avenue	Grove Street	Arterial	4	40,000	21,200	C
Sweetwater Road	Grove Street	I-805/Euclid Avenue	Arterial	4	40,000	26,300	C
Sweetwater Road	I-805/Euclid Avenue	Valley Road	Arterial	4	40,000	27,000	C
Sweetwater Road	Valley Road	Plaza Bonita Road	Arterial	6	50,000	14,800	A
Sweetwater Road	Plaza Bonita Road	Calmoor Street	Arterial	4	40,000	13,600	A
Sweetwater Road	Calmoor Street	Plaza Bonita Center Way	Collector	2+1	15,000	14,700	E
33 rd Street	Hoover Avenue	National City Boulevard	Collector	2	10,000	1,800	A
Valley Road	Sweetwater Road	Calle Abajo	Collector	2	10,000	7,000	C

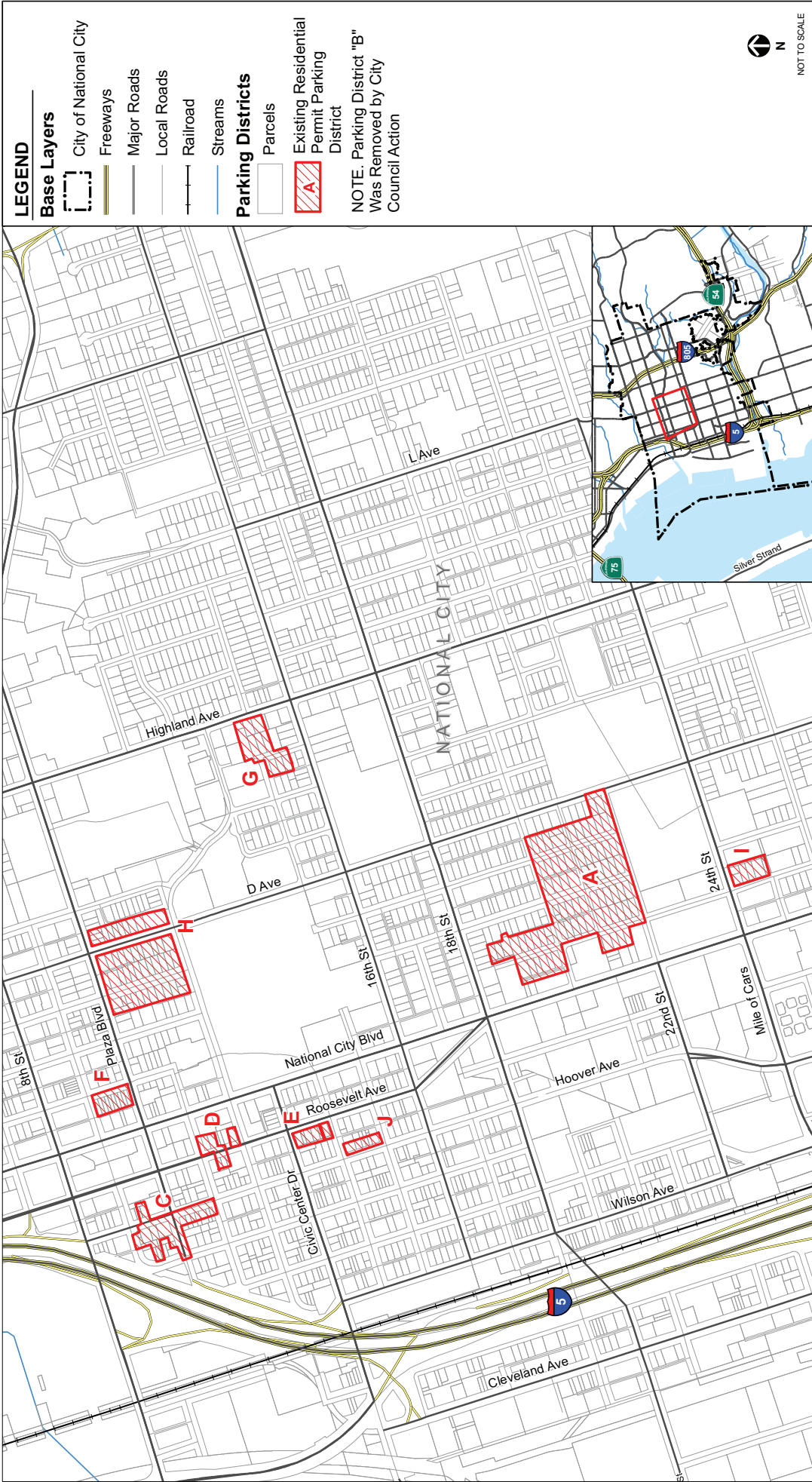
Source: City of National City, Fehr & Peers; September 2010

Note: Highlighted segments indicate substandard LOS E or F.



**TABLE 4.2:
ON-STREET PARKING ANALYSIS FOR ARTERIAL AND COLLECTOR ROADWAYS**

Street Name	Type	Date Observed	Time	% Occupancy
8 th Street	Arterial	8/3/2009	7-9 AM	50
Plaza Boulevard	Arterial	8/3/2009	7-9 AM	70
National City Boulevard	Arterial	8/3/2009	7-9 AM	70
30 th Street	Arterial	8/3/2009	7-9 AM	70
Sweetwater Road	Arterial	8/3/2009	7-9 AM	No parking
Plaza Bonita	Arterial	8/3/2009	7-9 AM	90
Euclid Avenue	Arterial	8/3/2009	7-9 AM	70
Division Street	Arterial	8/3/2009	7-9 AM	50
Highland Avenue	Arterial	8/3/2009	7-9 AM	50
National City Boulevard	Arterial	8/4/2009	4-6 PM	60
Harbor Drive	Arterial	8/4/2009	4-6 PM	No parking
8 th Street	Arterial	8/4/2009	4-6 PM	40
Plaza Boulevard	Arterial	8/4/2009	4-6 PM	60
Highland Avenue	Arterial	8/4/2009	4-6 PM	70
Euclid Avenue	Arterial	8/4/2009	4-6 PM	60
Division Street	Arterial	8/4/2009	4-6 PM	40
Marina Way	Collector	8/4/2009	4-6 PM	40
Hoover Avenue	Collector	8/24/2009	4-6 PM	80
Roosevelt Avenue	Collector	8/24/2009	4-6 PM	80
Avenue	Collector	8/24/2009	4-6 PM	60
L Avenue	Collector	8/24/2009	4-6 PM	80
Palm Avenue	Collector	8/24/2009	4-6 PM	50
Harbison Avenue	Collector	8/24/2009	4-6 PM	50
16 th Street	Collector	8/24/2009	4-6 PM	30
18 th Street	Collector	8/24/2009	4-6 PM	80
Granger Way	Collector	8/24/2009	4-6 PM	60
Hoover Avenue	Collector	8/25/2009	7-9 AM	20
Roosevelt Avenue	Collector	8/25/2009	7-9 AM	20
D Avenue	Collector	8/25/2009	7-9 AM	70
L Avenue	Collector	8/25/2009	7-9 AM	40
Palm Avenue	Collector	8/25/2009	7-9 AM	60
Harbison Avenue	Collector	8/25/2009	7-9 AM	10
16 th Street	Collector	8/25/2009	7-9 AM	60
18 th Street	Collector	8/25/2009	7-9 AM	80
Granger Way	Collector	8/25/2009	7-9 AM	50
Newell Street	Collector	8/25/2009	7-9 AM	90
Source: City of National City				



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RESIDENTIAL PERMIT PARKING AREAS
FIGURE 4-4

4.4 TRANSIT SERVICES AND FACILITIES

National City public transit is provided by the San Diego Metropolitan Transit System (MTS) and consists of public bus and light rail transit (or trolley). The following sections describe each of these modes within National City. **Figure 4-5** displays the transit routes and stops serving the City of National City.

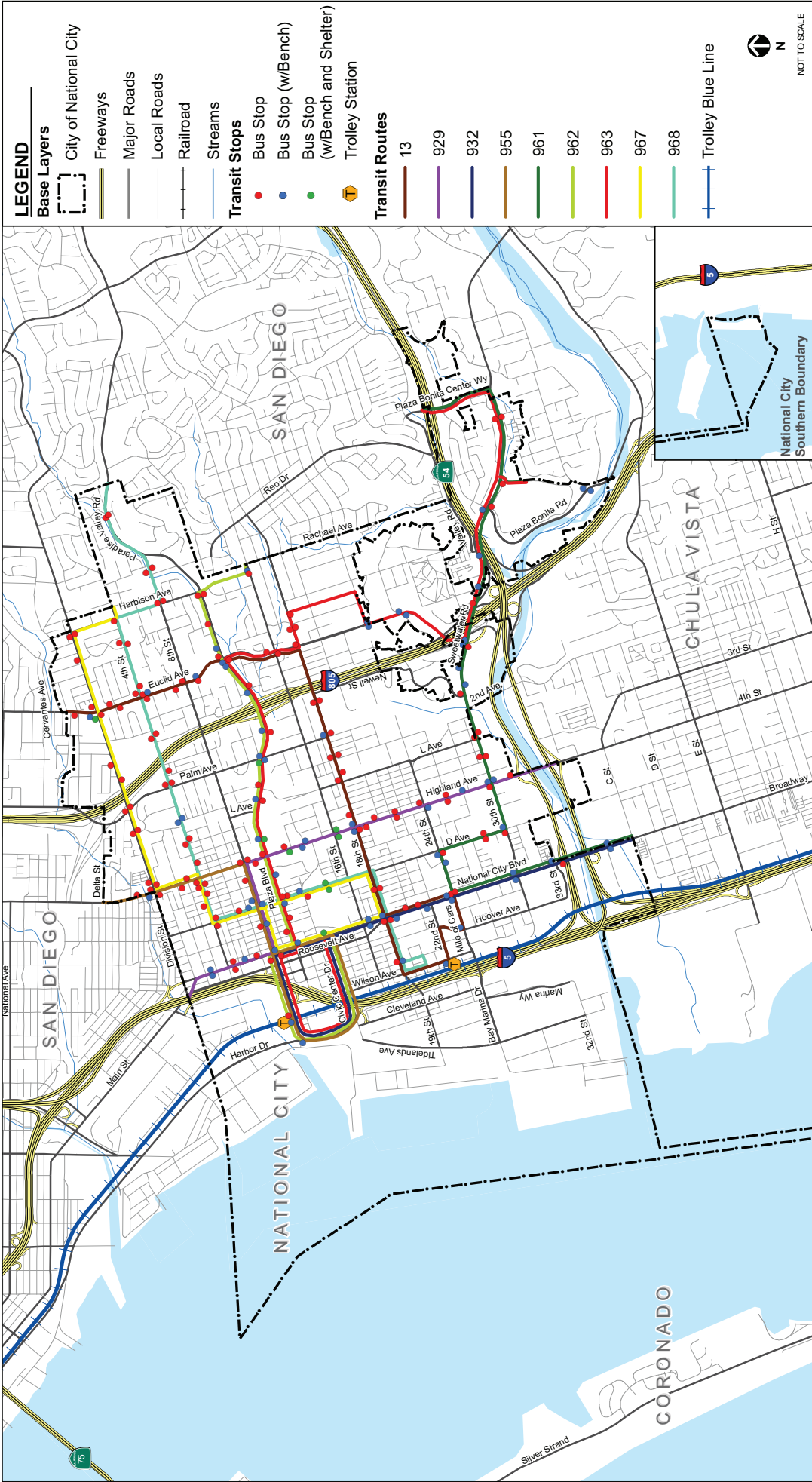
Trolley System

A network of trolley lines provides access both within the City of National City and to the greater San Diego region. The San Diego Trolley Blue Line has two stops located within the boundaries of National City: at 8th Street and at 24th Street.

Bus System

A system of public buses comprised of 10 routes serves the City of National City with a total of 211 bus stops located throughout the City.

- Route 13 – Runs from the 24th Street Trolley Station to Grantville. Major National City roadways served include 18th Street and Euclid Avenue.
- Route 929 – Runs through National City. The route begins on Union Street in San Diego and then runs to the San Ysidro/ International Border. The major National City roadways served are Main Street and Highland Avenue.
- Route 932 – Runs from the 8th Street Trolley Station to the San Ysidro/ International Border Transit Center. The major National City road served is National City Boulevard.
- Route 955 – Runs from the 8th Street Trolley Station to the SDSU Transit Center. Major National City roadways served include 8th Street, Highland Avenue, and Euclid Avenue.
- Route 961 – Runs from the 24th Street Trolley Station to the Encanto / 62nd Street Trolley Station. Major National City roadways served include 24th Street, 30th Street, Sweetwater Road, and Plaza Bonita.
- Route 962 – Runs from the 8th Street Trolley Station to Spring Valley Shopping Center. Major National City roadways served include Plaza Boulevard and Paradise Valley Road.
- Route 963 – Runs from the 8th Street Trolley Station to Westfield Plaza Bonita. Major National City roads served include Plaza Boulevard, Euclid Avenue, Granger Avenue, and Sweetwater Road.
- Route 967 – Runs from the 24th Street Trolley Station to Ava Street in Alta Vista. Major National City streets served include 18th Street, D Avenue, Highland Avenue, and Division Street.
- Route 968 – Runs from the 24th Street Trolley Station to the Paradise Valley Naval Exchange. Major National City roadways serviced include 18th Street, D Avenue, 4th Street, and Paradise Valley Road.



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TRANSIT ROUTES AND STOPS
FIGURE 4-5

National City has the second highest public transit ridership rates in San Diego County, slightly less than the City of Imperial Beach (US Census, 2005 data). This can be explained in part by the fact that approximately 7.4 percent of the owner-occupied households and 24.4 percent of renter occupied households in National City do not own a motor vehicle (US Census, 2000 data).

The City is well-served by transit with approximately 96 percent of dwelling units located within a quarter mile of a transit stop (SANDAG GIS data). **Figures 4-6** and **4-7** identify the various modes of commute for National City and San Diego County (US Census Community Survey 2005-2008). As shown, approximately 6.0 percent of National City commuter trips currently use transit, compared with approximately 3.0 percent for the County as a whole.

Figure 4-6 Commute Mode Shares in National City

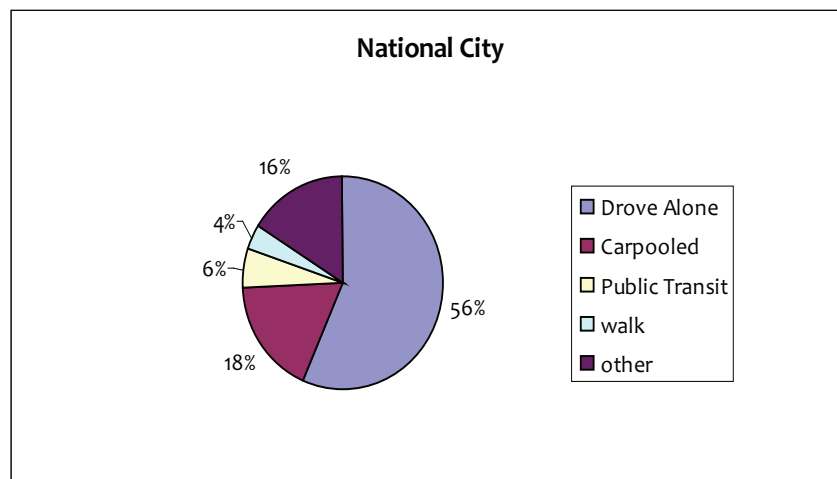
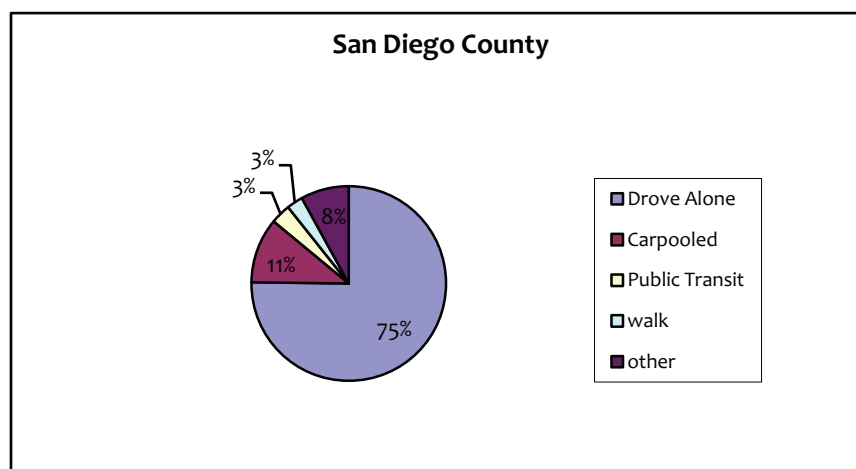


Figure 4-7 Commute Mode Shares in San Diego County



4.5 GOODS MOVEMENT FACILITIES

The goods or freight movement system in National City consists of rail lines, designated truck routes, and marine cargo terminals. Each system is discussed below as it relates to the operation and service of transporting freight. **Figure 4-8** depicts the network of goods movement facilities within National City.

Trucking Routes

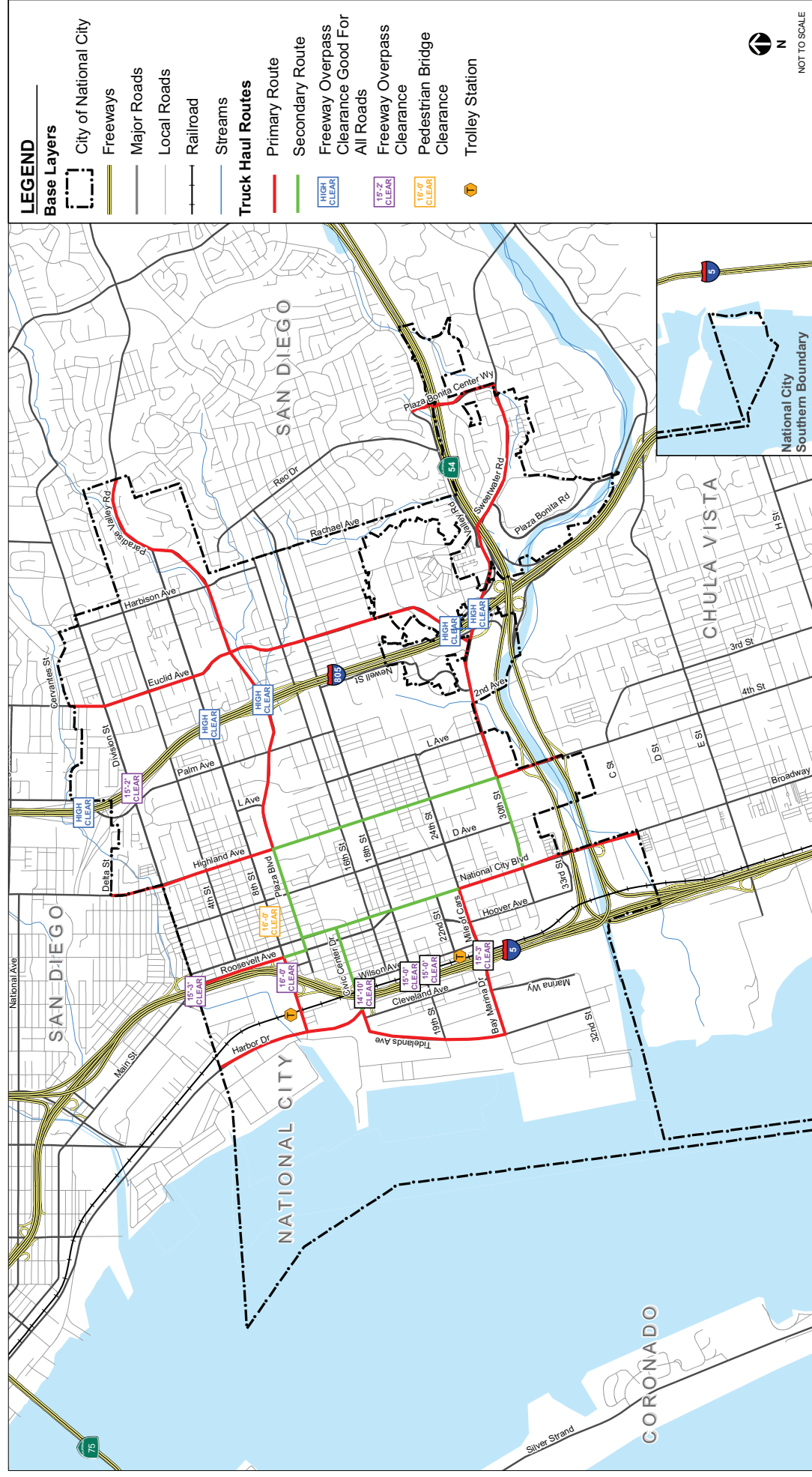
National City has designated truck haul routes for vehicles exceeding a gross vehicle weight of 6,000 lbs (3 tons), which may also include height, length, and width restrictions. Heavy vehicles are required to obtain a permit from the City. Truck haul routes facilitate regional goods movements from the freeways or neighboring jurisdictions to key destinations such as the National City Marine Cargo Terminal. Truck routes are classified as either primary or secondary routes. Primary routes are generally described as the most direct routes to/from freeways and neighboring jurisdictions. Secondary routes provide alternate connections to primary routes.

Primary Truck Routes within National City include the following 12 roadways:

- Tidelands Avenue (Civic Center Drive to Bay Marina Drive)
- Harbor Drive (northern City Boundary to Civic Center Drive)
- Roosevelt Avenue (northern City Boundary to 8th Street)
- National City Boulevard (Mile of Cars Way to 35th Street)
- Highland Avenue (northern City Boundary to Plaza Boulevard)
- Highland Avenue (30th Street to southern City Boundary)
- Euclid Avenue (northern City Boundary to Sweetwater Road)
- 8th Street (Harbor Drive to Roosevelt Avenue)
- Plaza Bonita Center Way (Valley Road to Sweetwater Road)
- Plaza Boulevard/Paradise Valley Road (Highland Avenue to eastern City Boundary)
- Bay Marina Drive/Mile of Cars Way (Tidelands Avenue to National City Boulevard)
- 30th Street/Sweetwater Road (Highland Avenue to Plaza Bonita Center Way)

Secondary Truck Routes include the following 5 roadways:

- Roosevelt Avenue (8th Street to Plaza Boulevard)
- National City Boulevard (Plaza Boulevard to Mile of Cars Way)
- Highland Avenue (Plaza Boulevard to 30th Street)
- Civic Center Drive (Harbor Drive to National City Boulevard)
- 30th Street (National City Boulevard to Highland Avenue)



Rail

Rail lines within National City have been traditionally used to transport lumber, cars, and containers that have entered the country via the Port of San Diego. Burlington Northern Santa Fe (BNSF) Railway and San Diego and Imperial Valley Railway are the two companies currently operating on the lines within National City.

National City Marine Cargo Terminal

The National City Marine Cargo Terminal is one of two marine cargo facilities owned by the Port of San Diego. It is located at the west end of Bay Marina Drive on the National City bayfront. The terminal is a 125-acre complex, with eight cargo berths. The National City Marine Cargo Terminal's main inventory consists of vehicles, lumber, and cargo. The Terminal can handle more than 500,000 vehicles per year. It has six railroad spurs totaling nearly 10,000 linear feet that can accommodate up to 125 conventional/Automax railcars. The terminal has on-site auto processing specialists, as well as automated cargo tracking and data collection.

The National City Marine Cargo Terminal is one of the most advanced vehicle import/export facilities on the West Coast, and a first-rate facility for special break-bulk, heavy equipment, and major project cargo. The facility is operated by Pasha Automotive and Distribution Services, and the terminal serves as the primary port of entry for Audi, Bentley, Honda, Isuzu, Mazda, Lotus, Mitsubishi, Porsche, and Volkswagen. Railroad tracks along the north side of the warehouses connect with BNSF Railway and San Diego & Imperial Valley Railway. Loading docks are located on the east side. The north side of the facility provides a truck ramp to warehouse floors for convenient loading and delivery.

5. CIRCULATION ELEMENT GOALS AND POLICIES

This chapter provides the relevant Goals and Policies that will serve to guide the future development of the City's circulation systems. As shown, each goal is supported by a set of more specific policies to assist in implementing the City's vision.

5.1 LAND USE AND CIRCULATION LINKAGES

Goal C-1: Coordinated land use and circulation planning.

Policy C-1.1: Allow, encourage, and facilitate transit-oriented development, mixed-use, and infill projects in appropriate locations to reduce vehicular trips, especially near the 8th Street and 24th Street trolley stops, the future South Bay Bus Rapid Transit Station (BRT), and along major transportation corridors such as 8th Street, Highland Avenue, Plaza Boulevard, and 30th Street/Sweetwater Road.

Policy C-1.2: Require new development to provide and enhance connectivity to existing transportation facilities via the provision of key roadway connections, sidewalks, and bicycle facilities.

Policy C-1.3: Require new development and redevelopment to provide good internal circulation facilities that meet the needs of pedestrians, bicyclists, children, seniors, and persons with disabilities.

Policy C-1.4: Require new development and redevelopment to apply universal design standards.

Policy C-1.5: Work with state, regional and local transportation entities to improve and expand transportation facilities and services that link residents to important land use destinations such as workplaces, schools, community and recreation areas, and shopping opportunities.

Policy C-1.6: Exact fees on new development and redevelopment sufficient to cover the fair share portion of that development's impacts on the local and regional transportation system, including multi-modal facilities, and/or directly mitigate its impacts to the transportation system through construction of improvements.

Why is this important?

Coordinated planning of land uses and the circulation system aims to ensure the efficient flow of vehicles, pedestrians, bicyclists, and transit operations within a community. Improvements or changes to the City's circulation system must be considered in conjunction with changes to land use patterns to ensure that adequate capacity will be accommodated for all modes of transportation.

5.2 MOBILITY FRAMEWORK

Goal C-2: A comprehensive circulation system that is safe and efficient for all modes of travel.

Policy C-2.1: Develop and maintain an interconnected, grid- or modified grid-based transportation system that sustains a variety of multi-modal transportation facilities.

Policy C-2.2: Enhance connectivity by eliminating gaps and barriers in roadway, bikeway, and pedestrian networks.

Policy C-2.3: Strive to attain an automobile LOS D or better (or a equivalent standard under another analytical methodology). An automobile LOS E or F may be acceptable under the following circumstances: 1) improvements necessary to attain a automobile LOS D or better would decrease the effectiveness of the non-automotive components of the multi-modal circulation system (i.e. pedestrians, bicyclists, mass/public transit, etc.), or 2) improvements necessary to increase the effectiveness of the non-automotive components of the multimodal transportation system result in a decrease in automobile LOS.

Policy C-2.4: Work with Caltrans, SANDAG, MTS, and other responsible agencies to identify, plan, and implement needed transportation improvements.

Policy C-2.5: Encourage traffic circulation improvements that minimize land acquisition and major construction, such as, but not limited to, enhanced road markings, synchronized traffic signals, Intelligent Transportation System (ITS) network management and more left turn restrictions.

Policy C-2.6: Enhance the quality of life in the City's neighborhoods and minimize impacts on schools, hospitals, convalescent homes and other sensitive facilities through the implementation of traffic calming measures in these areas to reduce vehicle speeds and discourage cut-through traffic.

Policy C-2.7: Improve circulation for specific areas of the City such as at the Harbor Drive/Tidelands Avenue/Civic Center Drive Intersection and the area west of National City Boulevard, south of 22nd Street and north of Mile of Cars Way.

Policy C-2.8: Implement road diets, where appropriate, as a means to improve safety, increase efficiency of pick-up and drop-off operations at schools, and provide greater separation between pedestrians and vehicles.

Policy C-2.9: Maintain a roadway circulation system with multiple alternative routes, to the extent feasible, to ensure mobility in the event of emergencies, and to minimize the need for capacity increases on particular streets. As needed, use signage to direct traffic to alternative routes during peak periods.

Policy C-2.10: Consider glorietas as an intersection traffic control option, where feasible and appropriate.

Policy C-2.11: Maintain safety throughout the circulation system by taking opportunities to introduce a safe design speed of any new roadways or during improvements to existing roads or intersections.

Policy C-2.12: Reduce crash risk on arterial streets by consolidating and minimizing driveways whenever possible.

Why is this important?

Recent revisions in planning law recognize the importance of planning for multiple modes of transportation, which provide for the needs of all users (including pedestrians, bicyclists, mass transit riders, motorists, etc.). (See AB 1358 [2008]; SB 375 [2008].) Recent revisions in environmental regulations also recognize that the overall effectiveness of the transportation system should be considered. (See California Natural Resources Agency, *Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97*, December 2009, page 75.) In some instances, deterioration of vehicular level of service may result in improvements to other forms of transportation, such as walking or bicycling, which may in turn have beneficial effects related to air quality, greenhouse gas emissions, energy consumption, and health. Walking and bicycling provide the additional benefits of improving public health and reducing treatment costs for conditions associated with reduced physical activity including obesity, heart disease, lung disease, and diabetes.

5.3 REGIONAL CIRCULATION PLANNING

Goal C-3: Coordination with the regional mobility system.

Policy C-3-1: Consult with SANDAG regarding updates to and implementation of the Regional Transportation Plan (RTP).

Policy C-3-2: Work with Caltrans and adjacent jurisdictions to plan and implement future roadway connections and circulation improvements.

Policy C-3.3: Consult with MTS regarding updates to the BRT and local bus routes and related activities.

Why is this important?

The Circulation Element is part of a larger body of plans and programs that guide the development and management of the transportation system. SANDAG, as the regional planning agency is responsible for developing the RTP, which includes a long-range vision for buses, the Trolley, rail, highways, major streets, bicycle travel, walking, goods movement, and airport services. SANDAG also oversees the planning, financial programming, project development, and construction functions of MTS. Caltrans manages more than 50,000 miles of California's highway and freeway lanes, provides inter-city rail services, and permits public-use airports and special-use hospital heliports. Due to the highly integrated and complex nature of the region's transportation facilities, it is important that local transportation planning efforts be considered with the regional system in order to attain the greatest efficiencies and benefits for the City.

5.4 TRANSPORTATION DEMAND MANAGEMENT

Goal C-4: Increased use of alternative modes of travel to reduce peak hour vehicular trips, save energy, and improve air quality.

Policy C-4.1: Encourage businesses to provide flexible work schedules for employees.

Policy C-4.2: Encourage employers to offer shared commute programs and/or incentives for employees to use transit.

Policy C-4.3: Require new uses to provide adequate bicycle parking and support facilities.

Policy C-4.4: Encourage carpooling and other shared commute programs.

Policy C-4.5: Encourage the use of alternative transportation modes.

Policy C-4.6: Prioritize attention to transportation issues around schools to reduce school-related vehicle trips.

Policy C-4.7: Seek opportunities to reduce vehicle trips before requiring physical roadway improvements.

Why is this important?

Reducing vehicular trips, especially at peak commuting times, can be accomplished through: improvements to pedestrian circulation, bike and transit systems; increased use of carpooling; and accommodations made by employers to allow for flexible work schedules, including work from home

provisions. Trip reduction, by whichever means, translates into less traffic congestion, fewer greenhouse gas emissions and improved regional and local air quality.

5.5 VEHICULAR PARKING

Goal C-5: Parking provided and managed in a way that balances economic development, livable neighborhoods, environmental health, and public safety with a compact, multi-modal environment.

Policy C-5.1: Ensure balance among visitor, business, and residential parking needs.

Policy C-5.2: Require new development and redevelopment to locate off-street parking facilities behind storefronts to create a more inviting environment adjacent to the street, where feasible.

Policy C-5.3: Require parking lots to provide shade through the use of landscaping (i.e., a tree canopy) and additionally encourage the use of solar photovoltaic shading to reduce the heat island effect, where feasible.

Policy C-5.4: Where appropriate, provide on-street diagonal parking to increase the number of spaces and slow traffic to create more pedestrian-friendly streets.

Policy C-5.5: Require the use of universal design standards in parking design and compliance with the Americans with Disabilities Act accessibility guidelines.

Policy C-5.6: Provide clearly marked pedestrian paths between on-street parking, off-street parking facilities, and the buildings they serve, where feasible.

Policy C-5.7: Allow for shared parking and parking requirement reductions for mixed-use and transit-oriented development.

Policy C-5.8: Establish parking time limitations, where appropriate.

Policy C-5.9: Establish public parking fees, where appropriate.

Policy C-5.10: Require new development and redevelopment to provide sufficient parking. In determining what constitutes sufficient parking, the City may take into consideration: 1) the overall effectiveness of the circulation system as a whole (i.e., pedestrians, bicyclists, motorized vehicles, etc.); 2) the particular needs of a specific location and/or project, and 3) the need for increased densities and mixed-use development intended to aid in the reduction of personal vehicle use and the corresponding reduction in air pollution, energy consumption, greenhouse gas emissions, and other environmental effects.

Why is this important?

Adequate parking is essential for both residents and visitors and to the economic viability of commercial establishments within a community. However, concentrated parking areas can create substantial environmental impacts including, but not limited to, hot-spots and increased stormwater run-off and pollution. Parking lots can also interfere with pedestrian and bicycle circulation. Balancing demand with these other concerns is critical to planning for parking within the community.

5.6 GOODS MOVEMENT

Goal C-6: A safe and efficient system for the movement of goods that supports commerce while enhancing the livability of the community.

Policy C-6.1: Work with the responsible and affected agencies to enhance infrastructure to facilitate timely movement of goods and security of trade, including facilities used for efficient intermodal transfer between truck, rail, and marine transport.

Policy C-6.2: Enforce the use of designated truck routes for both local and regional goods transport.

Policy C-6.3: Work with the responsible and affected agencies to improve the roadway connection between Tideland Avenue and Harbor Drive for greater efficiency of freight goods movement.

Policy C-6.4: Work with railroad operators to facilitate the transport of goods by rail through the community by coordinating schedules to minimize impacts during peak travel periods.

Policy C-6.5: Work with the Port District on land use and transportation planning efforts to mitigate impacts and improve goods movement related to the marine terminal.

Why is this important?

The San Diego region plays an important national role in the movement of goods through both the presence of the Port and the proximity of the U.S.-Mexican border. Efficient movement of goods via car, truck, rail, air or marine transport is vital to the economic health of the community and entire region.

5.7 PUBLIC TRANSIT

Goal C-7: Increased use of transit systems.

Policy C-7.1: Encourage responsible agencies to provide a well designed transit system that meets the needs of the community, commerce, and visitors.

Policy C-7.2: Improve bus stop and shelter facilities to increase the comfort of users.

Policy C-7.3: Provide multi-modal support facilities near and to/from transit stops for bicyclists and pedestrians, including children and youth, the seniors, and persons with disabilities.

Policy C-7.4: Encourage transit providers to post route maps and pick up/drop off times at each stop.

Policy C-7.5: Work with transit providers to maintain and enhance services within the City that are timely, cost-effective, and responsive to growth and redevelopment.

Policy C-7.6: Encourage responsible agencies and affected businesses to provide shuttle service between transit stations to major activity centers such as Plaza Bonita.

Policy C-7.7: Work with responsible agencies to provide convenient bus stop locations.

Why is this important?

Expanding use of the transit system will help the community meet numerous goals and objectives set forth in the General Plan including, increasing mobility, preserving and enhancing neighborhood character, improving air quality, reducing storm water runoff, reducing paved surfaces, and fostering compact development and a more walkable city.

5.8 PEDESTRIAN CIRCULATION

Goal C-8: A universally accessible, safe, and convenient pedestrian system that encourages walking.

Policy C-8.1: Provide connectivity of wide, well-lit walking environments with safety buffers between pedestrians and vehicular traffic, when feasible.

Policy C-8.2: Require new development and redevelopment to incorporate pedestrian-oriented street designs that provide a pleasant environment for walking.

Policy C-8.3: Identify and implement necessary pedestrian improvements with special emphasis on providing safe access to schools, parks, community and recreation centers shopping districts, and other appropriate facilities.

Policy C-8.4: Promote walking as the primary travel mode to schools.

Policy C-8.5: Improve pedestrian safety at intersections and mid-block crossings.

Policy C-8.6: Reduce architectural barriers that restrict full movement and access by less mobile segments of the population consistent with the Americans with Disabilities Act.

Policy C-8.7: Apply universal design standards to the pedestrian system.

Policy C-8.8: Provide a continuous pedestrian network within and between neighborhoods to facilitate pedestrian travel free from major impediments and obstacles.

Why is this important?

Improving the pedestrian system through enhancements to walkability – more attractive streetscapes, continuous, well-paved sidewalks, proximity of destinations, adequate lighting, safe street crossings, etc., is found to encourage pedestrian activity within the community. An increased reliance on walking and decreased reliance on vehicular transport poses both health and environmental benefits.

5.9 BIKEWAYS

Goal C-9: A safe, comprehensive and integrated bikeway system that encourages bicycling.

Policy C-9.1: Expand and improve the bikeway system and facilities by establishing bike lanes, separated paths, and bicycle storage facilities at major destinations.

Policy C-9.2: Require new development and redevelopment to provide safe, secure bicycle parking facilities.

Policy C-9.3: Require new development and redevelopment to provide connections to existing and proposed bicycle routes, where appropriate.

Policy C-9.4: Encourage existing businesses and new development or redevelopment projects to promote bicycling and provide bike rack facilities, personal lockers, and shower rooms.

Policy C-9.5: Encourage bicycling through education and promotion programs in conjunction with the local school districts.

Policy C-9.6: Keep abreast of bicycle facility innovations in other cities and regions, and seek to incorporate these into the bicycle network.

Why is this important?

Bicycling provides a very viable alternative to most in-town trips that are typically taken by car, if the necessary infrastructure to provide for cyclist safety is in place. Bicycling offers many benefits to both the community and the individual cyclist. Bicycling is a non-polluting and sustainable form of transportation that with greater use can help reduce greenhouse gas emissions and the city's carbon footprint. Also, it serves as a form of physical activity, resulting in health benefits for the cyclist.

6. FUTURE YEAR 2030 CONDITIONS

This chapter presents the assessment of future year 2030 operating conditions on the City's circulation network. While the majority of the analysis is focused on future roadway conditions, an assessment of future transit and non-motorized travel (bike and pedestrian) and goods movements opportunities is also provided.

6.1 BICYCLES FACILITIES

One of the goals for this Circulation Element Update is to create a safe, comprehensive and integrated bikeway system that would encourage bicycling. Two of the implementation measures related to this effort are updating the current Bicycle Master Plan and establishing a community corridor system.

6.1.1 *Bicycle Master Plan*

The City's Bicycle Master Plan is in the process of being updated and the results will be incorporated into the updated Circulation Element. **Figure 6-1** displays the proposed bicycle facilities.

6.1.2 *Community Corridors*

On September 30, 2008, the State approved Assembly Bill 1358 – The Complete Streets Act. This bill requires, commencing January 1, 2011, that the legislative body of a city or county, upon any substantive revision of the circulation element of the general plan, modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways, defined to include motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation, in a manner that is suitable to the rural, suburban, or urban context of the general plan. By requiring new duties of local officials, this bill would impose a state-mandated local program.

In light of AB 1358, a community corridor system throughout the City of National City is proposed as a part of this Circulation Element Update. The community corridor system is a network of well connected multimodal streets that enables all users (pedestrians, bicyclists, transit riders and motorists) to safely move along in the circulation network. The three primary objectives of implementing community corridors are to calm traffic, to enhance safety and access for pedestrian and bicyclist, as well as to promote walkability and improve quality of life through functional and attractive streetscaping. Several measures or considerations were employed for determining the City's community corridor facilities, including:

- Pedestrian Safety and Access
- Vehicle Speeds
- Bicycle Network Connectivity
- Parking Demand
- Proximity to Schools, Parks and Transit Centers
- Adjacent Land Uses and Property Access
- Revitalization and Smart Growth Redevelopments (such as 8th Street Smart Growth Revitalization project from the Trolley Station to D Avenue)

A variety of community corridor features are proposed, include number of travel lane reduction, lane width reduction, angled parking, Class II bicycle lane pair with parallel parking on one side or both sides, and sidewalk widening. Detailed typical cross-sections for these Community Corridors are included in **Appendix A**.

Figure 6-2 illustrates the proposed community corridors as an integral component of the City's transportation network. The proposed corridors are:

North-South Corridors

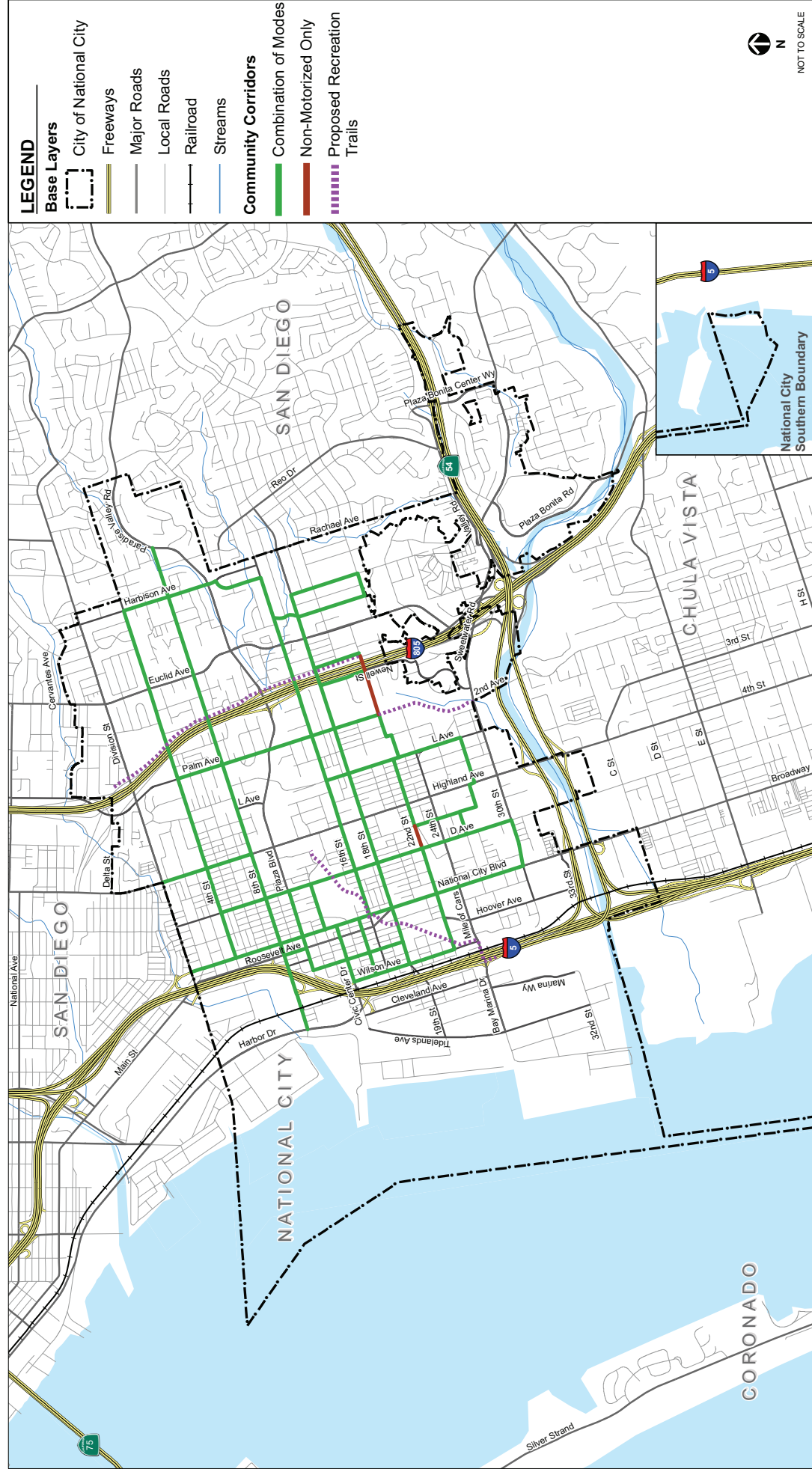
- Wilson Avenue, between Civic Center Drive and 22nd Street
- Coolidge Avenue, between Plaza Boulevard and 18th Street
- Roosevelt Avenue, between 8th Street and Plaza Boulevard
- National City Boulevard, between Division Street and 30th Street
- D Avenue, between 4th Street and 30th Street
- F Avenue, between 18th Street and 28th Street
- Highland Avenue, between Division Street and 8th Street
- L Avenue, between 16th Street and 28th Street
- Palm Avenue, between 4th Street and 22nd Street
- Newell Street, between 18th Street and 22nd Street
- Grove Street, between 18th Street and 22nd Street
- Lanoitan Avenue, between 16th Street and 24th Street
- Granger Avenue, between 18th Street and 24th Street
- Harbison Avenue, between 4th Street and 16th Street

East-West Corridors

- 4th Street, between National City Boulevard and Harbison Avenue
- 8th Street, between Harbor Drive and Paradise Valley Road
- Plaza Boulevard, between Coolidge Avenue and D Avenue
- 12th Street, between National City Boulevard and D Avenue
- Civic Center Drive, between Wilson Avenue and National City Boulevard
- 15th Street, between Wilson Avenue and National City Boulevard
- 16th Street, between National City Boulevard and Harbison Avenue
- 18th Street, between Wilson Avenue and Granger Avenue
- 22nd Street, between Wilson Avenue and Grove Street
- 24th Street, between Lanoitan Avenue and Granger Avenue
- 26th Street, between D Avenue and F Avenue
- 28th Street, between F Avenue and L Avenue
- 30th Street, between National City Boulevard and D Avenue

Recreational trails are also proposed as part of the community corridor system to improve connection and circulation for non-motorized travel. Two recreation trails are proposed, including one along Paradise Creek, and the other one along I-805 and Las Palmas Park.





6.2 PEDESTRIAN FACILITIES

The community corridor system discussed in the previous section would improve pedestrian safety, connectivity, and access. In addition to the community corridor system, the concept of street conversions, such as what was done with 9th street to create Morgan Square, is also proposed. Street conversions allow for the creation of green spaces/pocket parks, enhance pedestrian environment, and/or reduce neighborhood cut-through traffic.

6.2.1 Street Conversions

Approximately 30 potential street conversion sites were initially selected by the Project Team. A set of street conversion evaluation criteria were developed to evaluate circulation and traffic operations. These criteria were employed along with input from the Project Team, City Council, fire department, as well as residents. A final set of street conversion locations were selected as shown in **Figure 6-3**, Street Conversion Location Map. Detailed evaluations/analyses of circulation impacts at these locations were subsequently conducted. The following summarizes the results of the street conversion analyses and provides a brief description of the pros and cons of each street conversion site.

Evaluation Criteria

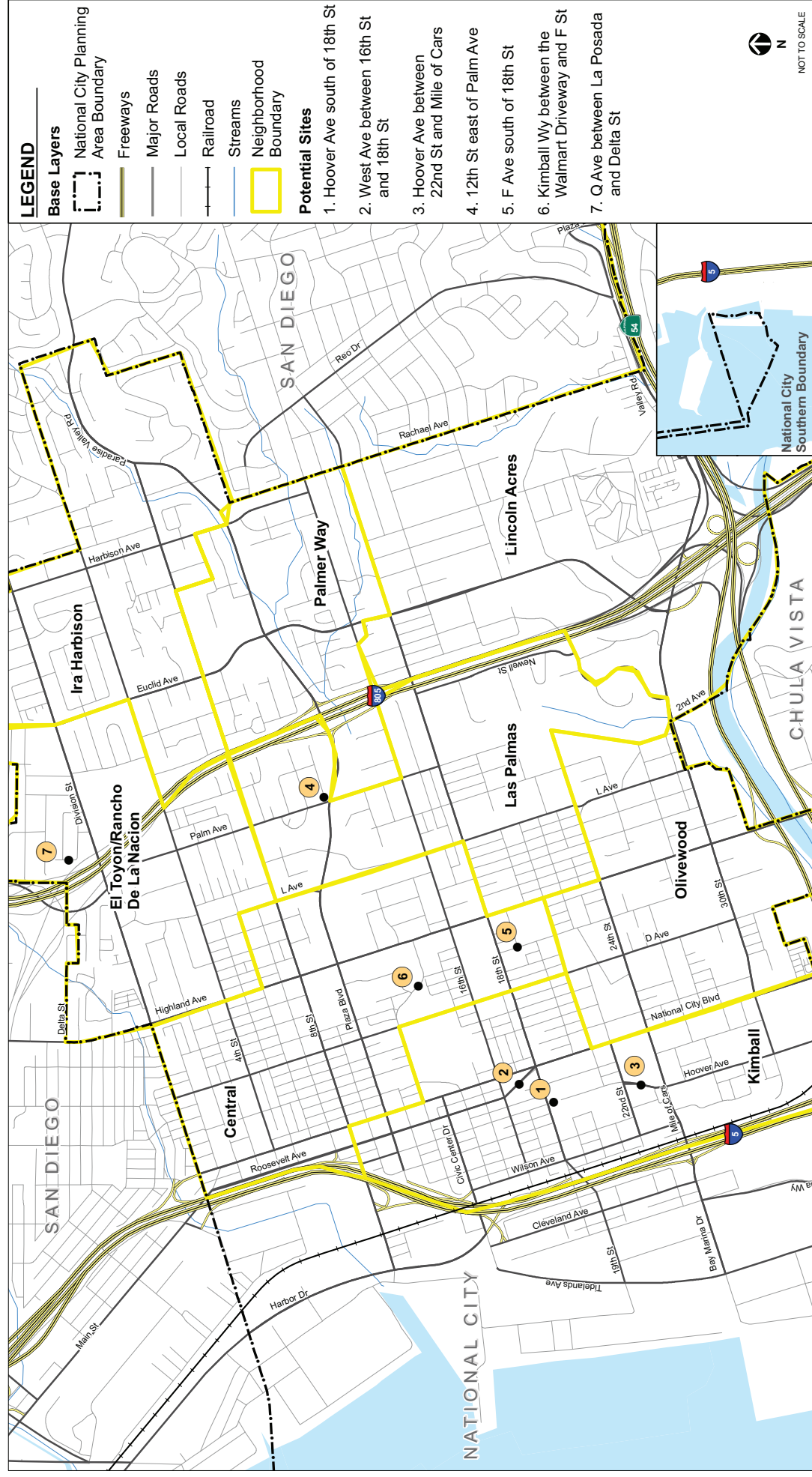
The broader list of potential street conversions were screened using circulation and traffic operation related evaluation criteria, as well as community input to derive a final set for more detailed evaluations. The criteria were categorized into four (4) main aspects: circulation, access, safety, and parking. Each category of criteria included considerations of more detailed items as listed below:

Criteria 1: Circulation

- Street Classification
- Street Network Connectivity
- Diverted Traffic Volumes (High, Medium, Low)
- Alternative Parallel Routes
- Designated Bus/Bicycle Routes

Criteria 2: Access

- Driveways/Alleys (property access)
- Type/Density of Adjacent Land Uses
- Emergency Vehicle Access



Criteria 3: Safety

- Reconfiguration of Roadways/Intersections
- Traffic Calming
- Vehicle/Pedestrian Conflicts

Criteria 4: Parking

- Parking Demand
- Net Change in Parking Supply
- Alternative Parking Supply.

Based on the above evaluation criteria and Project Team input, seven (7) street conversion locations were identified for further consideration. More detailed circulation impact analyses were then conducted to identify potential impacts of each of the proposed street conversions on circulation, access, safety and parking, as summarized below for each street conversion site.

Site 1: Hoover Avenue, South of 18th Street

The proposed street conversion is located along Hoover Avenue south of 18th Street to the terminus of that portion of the street at Paradise Creek. Paradise Creek Educational Park is located at the end of this street. Kimball Elementary School is located west of the site and auto-related businesses are located to the east on either side of Paradise Creek. *This conversion site was previously studied by the City, and therefore no further analysis was required.*

Site 2: West Avenue between 16th Street and 18th Street

The proposed street conversion is located along West Avenue between 16th Street and 18th Street. The existing businesses on both sides of the street are auto-related services that are accessible from streets other than West Avenue. Paradise Creek, which runs underground from Kimball Park, is exposed on the west side of West Avenue, providing a view along the creek to 18th Street where it goes underground again. *This conversion site was previously studied by the City, and therefore no further analysis was required.*

Site 3: Hoover Avenue between 22nd Street and Miles of Cars Way

The proposed street conversion is along Hoover Avenue between 22nd Street and Miles of Cars Way. The site is located in Kimball community.

Circulation Review

Hoover Avenue is a local street, and carries moderate traffic volume. Based on the data provided by City, the ADT volume along the roadway segment is approximately 3,000 vehicles per day. With the street conversion, traffic would be diverted to nearby alternate routes. The nearest parallel facility to Hoover Avenue is National City Boulevard (approximately 650 feet to the east). The existing ADT is 13,300 along National City Boulevard between 16th Street and 24th Street is currently operating at LOS A. With the street conversion, an additional 3,000 vehicles would shift from Kimball Way to National City Boulevard, which will result in a total ADT of 16,300 vehicles per day (@ LOS B).

It should be noted that the MTS Route 13 currently operates along Hoover Avenue. Furthermore, based on the current City of National City Bicycle Plan, Hoover Avenue is also a designated bicycle route. Thus the street conversion would impact both bus operations and access to a bicycle facility.

Access Review

Although the conversion at Hoover Avenue would close the driveway access to the nearby parking lots, there is an alternative alleyway for accessing the parking sites. The proposed street conversion would therefore not have any significant impacts on property access.

Safety Review

A linear pocket park at this location would improve pedestrian safety significantly.

Parking Review

A number of on-street parking spaces would be eliminated due to this street conversion, however, adequate parking supply would be provided in the adjacent parking lots.

Site 4: 12th Street East of Palm Avenue (@ Plaza Boulevard)

The proposed street conversion is along 12th Street east of Palm Avenue, which is located in Las Palmas community. The conversion is proposed to end approximately 100 feet or less east of Palm Avenue.

Circulation/Safety Review

12th Street is a local street which carries very low traffic volume. Based on the traffic counts conducted in February 2010, the ADT volume along this segment is approximately 320 vehicles per day. With the street conversion, traffic would be diverted to the nearby alternate routes, without causing capacity issues to them. The nearest parallel facility to 12th Street is 11th Street, which is located approximately 300 feet on the north side.

In addition, 12th Street serves as the fifth leg at the intersection of Palm Avenue and Plaza Boulevard, which only allows right turn onto northbound Palm Avenue. With the conversion, the fifth leg would be removed, and hence would improve traffic operations at the intersection, as well as pedestrian and vehicular safety.

Access Review

Since the proposed conversion would end just west of the first driveway along 12th Street, no property access issues are anticipated. This section of the street would remain open for emergency vehicle access only.

Parking Review

According to the conceptual plan of the street conversion, approximately 6 on-street parking spaces would be eliminated. Consequently, the proposed street conversion would result in a net loss of 6 on-street parking space.

Site 5: F Avenue south of 18th Street

The proposed street conversion is located in John Otis community.

Circulation Review

This segment is a local street and carries low traffic volumes. Based on the traffic counts conducted in February 2010, the ADT volume along F Avenue (south of 18th Street) is approximately 1,690 vehicles per day. With the street conversion, the affected traffic would be diverted to the nearby alternate routes, including E Avenue (300 feet to the west) and Highland Avenue (300 feet to the east). Alley access to nearby properties is also available. The street conversion is therefore not anticipated to have any significant impacts on traffic circulation.

Access Review

Since the proposed conversion would end just north of the first driveways along F Avenue, no property access issues are anticipated.

Safety Review

A school is located adjacent to the conversion site and the proposed conversion would improve pedestrian safety (both for residents and students).

Parking Review

Approximately 28 on-street parking spaces would be eliminated. However, according to a conceptual plan of the street conversion, the street would be striped for parallel parking on both sides, which would provide 21 additional parking spaces. As a result, the proposed street conversion would result in a net loss of approximately 7 on-street parking spaces.

Site 6: Kimball Way from Wal-Mart driveway to just west of F Avenue

The proposed street conversion is located along Kimball Way between the Wal-Mart driveway and west of F Avenue, and would create a pedestrian connection along Paradise Creek. The site is located in John Otis community.

Circulation Review

Kimball Way is a local street close to Paradise Creek which carries moderate traffic volumes. The ADT volume traveling along Kimball Way (between the Wal-Mart driveway and F Avenue) is approximately 3,560 vehicles per day. With the street conversion, the affected traffic would be diverted to the nearby alternate routes. The closest parallel facilities to Kimball Way are Plaza Boulevard to the north and 16th Street to the south. It is assumed that the existing traffic along Kimball Way would be evenly shifted to the aforementioned alternate routes, with an additional 1,780 vehicles per day added to both Plaza Boulevard and 16th Street. As shown in **Table 6.1**, Plaza Boulevard would still operate at LOS B with the implementation of the proposed street conversion, similar to existing conditions. 16th St is anticipated to operate at LOS D under street conversion conditions, which is still acceptable according to the City's LOS threshold. Therefore, it can be concluded that the conversion would not have any negative impacts on traffic circulation.

Access Review

With the proposed street conversion, traffic currently using Kimball Way to access the Wal-Mart would have to access Highland Avenue.

**TABLE 6.1:
SITE 6 STREET CONVERSION LOS**

Alternative Street	Segment	Classification	Lanes	Existing ¹		With Street Conversion	
				ADT	LOS	ADT	LOS
Plaza Blvd	D Ave – Highland Ave	Secondary Arterial	4	10,200	B	11,980	B
16 th St	D Ave – Highland Ave	Collector	2	6,600	C	8,380	D

Note: ¹ Existing ADT and LOS is based on Background Report, 2009.

Safety Review

The conversion is also expected to improve pedestrian safety for residents and the adjacent senior community.

Parking Review

The conversion would not impact parking in any manner.

Site 7: Q Avenue between La Posada Street and Delta Street

The proposed street conversion is located along Q Avenue between La Posada Street and Delta Street, in the El Toyon/Rancho de la Nacion community.

Circulation Review

Q Avenue is a local street that only serves minimal residential units and carries very low traffic volumes. With the street conversion, the affected traffic would be diverted to the nearby alternative routes. S Avenue is located to the east of Q Avenue and would be the nearest parallel facility. Given the low traffic volumes, no resulting circulation impacts would be anticipated.

Access Review

There is no driveway/alley access located along the proposed conversion site (Q Avenue), thus there would be no impact on access to adjacent properties.

Safety Review

The conversion site is located in a residential neighborhood and would improve pedestrian safety for surrounding residents.

Parking Review

The street conversion would eliminate approximately 20 on-street parking spaces along Q Avenue. However, according to the conceptual plan of the street conversion, 4 additional parking spaces would be provided at the north end of the closure (adjacent to La Posada). Therefore, the proposed street conversion would result in a net loss of approximately 16 on-street parking spaces.

6.3 ROADWAY NETWORK

This section summarizes the future year traffic modeling and analyses which were conducted to support the City's proposed Circulation Element roadway network. Analyses were conducted on both the adopted and proposed Circulation Elements.

6.3.1 Adopted Circulation Element

This scenario represents year 2030 and uses anticipated travel demands as signed to the City's currently adopted Circulation Element network.

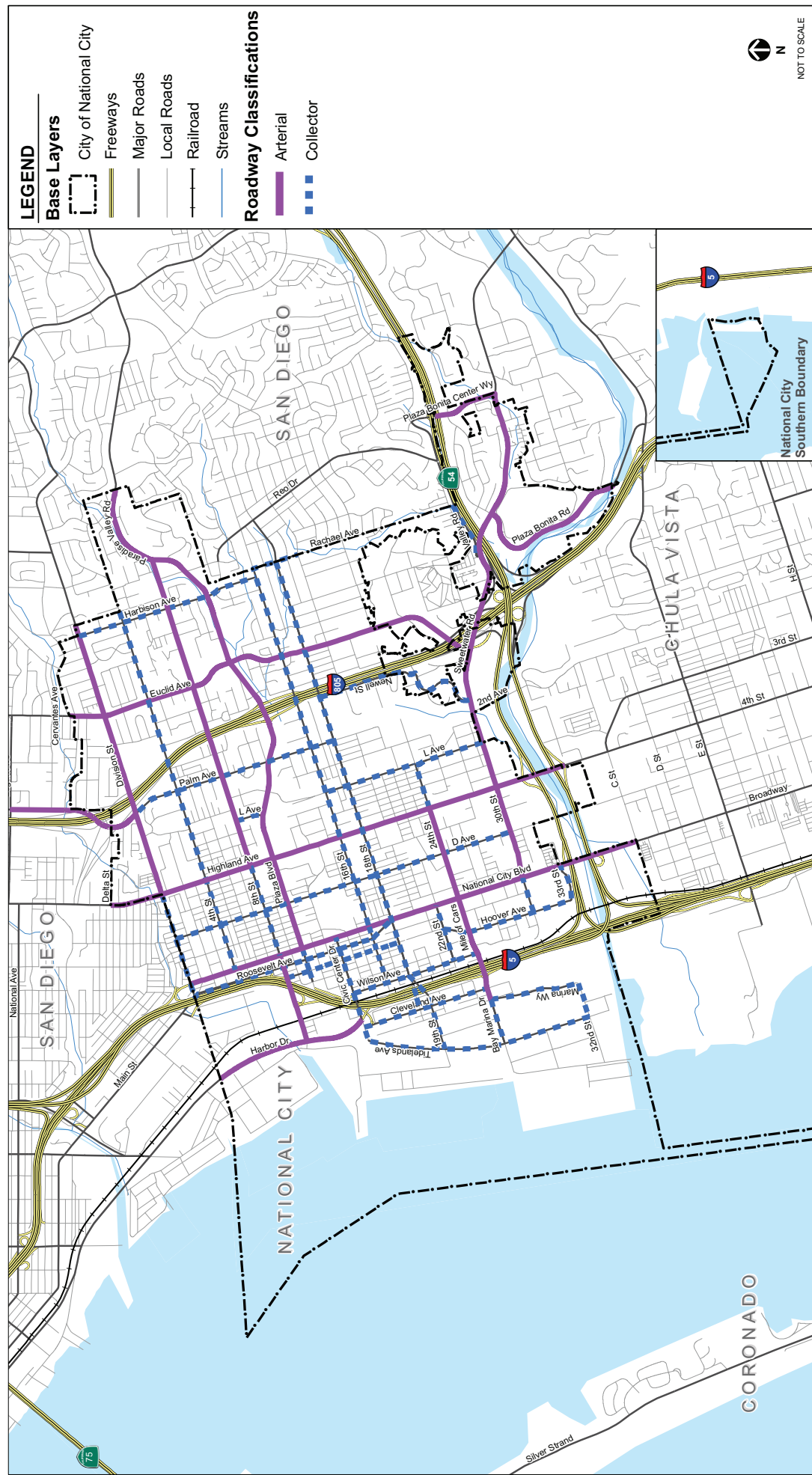
Figure 6-4 illustrates the City's currently adopted Circulation Element network and roadway functional classifications. The adopted network is largely similar to the existing network with a few exceptions, as follows:

- Wilson Avenue, between 22nd Street and Mile of Cars is classified as a 2-lane Collector (Existing - 1-lane Collector),
- 8th Street, between National City Boulevard and Highland Avenue is classified as a 2-lane with two-way left-turn lane Collector (Existing – 4-lane Arterial),
- Plaza Boulevard, between Coolidge Avenue and Hoover Avenue is classified as 2-lane Collector (Existing - 1-lane Collector),
- Plaza Boulevard, between Highland Avenue and Euclid Avenue is classified as a 6-lane Arterial (Existing – 4-lane Arterial), and
- Sweetwater Road, between Calmoor Street and Plaza Bonita Center Way is classified as a 4-lane Arterial (Existing - a 2-lane with two-way left-turn lane Collector).

Level of Service was calculated for the key roadway segments to evaluate the future year 2030 traffic conditions under the adopted Circulation Element. **Table 6.2** shows the results of the roadway Level of Service analysis, while **Figure 6-5** displays the results in a mapped format. As shown, the following roadway segments (22 in total) are projected to operate at LOS E or F under year 2030 adopted Circulation Element Plan:

- Wilson Avenue, between Civic Center Drive and 18th Street (LOS F),
- Wilson Avenue, between 18th Street and 22nd Street (LOS F),
- Roosevelt Avenue, between 8th Street and Plaza Boulevard (LOS E),
- Palm Avenue, between Division Street and 4th Street (LOS F),
- Palm Avenue, between 4th Street and 8th Street (LOS F),
- Palm Avenue, between 8th Street and Plaza Boulevard (LOS F),
- Palm Avenue, between Plaza Boulevard and 16th Street (LOS F),
- Division Street, between D Avenue and Highland Avenue (LOS F),
- 4th Street, between National City Boulevard and D Avenue (LOS E),
- 4th Street, between Palm Avenue and Euclid Avenue (LOS E),

- 4th Street, between Euclid Avenue and Harbison Avenue (LOS E),
- 8th Street, between National City Boulevard and D Avenue (LOS E),
- Plaza Boulevard, between Coolidge Avenue and Hoover Avenue (LOS E),
- Plaza Boulevard, between School Xing and Harbison Avenue (LOS E),
- 16th Street, between L Avenue and Palm Avenue (LOS F),
- 16th Street, between Palm Avenue and Euclid Avenue (LOS F),
- 18th Street, between L Avenue and Palm Avenue (LOS F),
- 18th Street, between Palm Avenue and Newell Street (LOS E),
- 18th Street, between Newell Street and Euclid Avenue (LOS F),
- 18th Street, between Euclid Avenue and Rachael Avenue (LOS E),
- 22nd Street, between Wilson Avenue and Hoover Avenue (LOS E), and
- 22nd Street, between Hoover Avenue and National City Boulevard (LOS F).



**TABLE 6.2:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
ADOPTED GP – YEAR 2030 CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Harbor Drive	Division Street	8 th Street	Arterial	4	40,000	26,100	C
Harbor Drive	8 th Street	Civic Center Drive	Arterial	4	40,000	18,500	B
Tidelands Avenue	Civic Center Drive	19 th Street	Collector	2	10,000	5,500	B
Tidelands Avenue	19 th Street	Bay Marina Drive	Collector	2	10,000	4,000	A
Tidelands Avenue	Bay Marina Drive	32 nd Street	Collector	2	10,000	2,800	A
Marina Way	Bay Marina Drive	32 nd Street	Collector	2+1	15,000	7,000	B
Cleveland Avenue	Civic Center Drive	19 th Street	Collector	2+1	15,000	5,000	A
Cleveland Avenue	19 th Street	Bay Marina Drive	Collector	2+1	15,000	5,100	B
Wilson Avenue	Civic Center Drive	18 th Street	Collector	2	10,000	12,400	F
Wilson Avenue	18 th Street	22 nd Street	Collector	2	10,000	11,500	F
Wilson Avenue	22 nd Street	Mile of Cars Way	Collector	2	10,000	5,800	C
Hoover Avenue	8 th Street	18 th Street	Collector	2	10,000	8,800	D
Hoover Avenue	22 nd Street	Mile of Cars Way	Collector	4	20,000	7,000	A
Hoover Avenue	Miles of Cars Way	30 th Street	Collector	4	20,000	14,300	D
Hoover Avenue	30 th Street	33 rd Street	Collector	2	10,000	4,200	B
Roosevelt Avenue	Division Street	4 th Street	Collector	2	10,000	8,100	D
Roosevelt Avenue	4 th Street	8 th Street	Collector	2	10,000	8,100	D
Roosevelt Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	9,700	E
Roosevelt Avenue	Plaza Boulevard	Civic Center Drive	Collector	2	10,000	6,400	C
Roosevelt Avenue	Civic Center Drive	16 th Street	Collector	2	10,000	4,600	B
West Avenue	16 th Street	18 th Street	Collector	2	10,000	6,600	C
National City Boulevard	Division Street	4 th Street	Arterial	4	40,000	16,500	B
National City Boulevard	4 th Street	8 th Street	Arterial	4	40,000	16,000	B
National City Boulevard	8 th Street	Plaza Boulevard	Arterial	4	40,000	19,800	B
National City Boulevard	Plaza Boulevard	Civic Center Drive	Arterial	4	40,000	15,200	B
National City Boulevard	Civic Center Drive	16 th Street	Arterial	4	40,000	16,700	B
National City Boulevard	16 th Street	18 th Street	Arterial	4	40,000	14,800	A
National City Boulevard	18 th Street	22 nd Street	Arterial	4	40,000	17,500	B
National City Boulevard	22 nd Street	24 th Street	Arterial	4	40,000	16,100	B

**TABLE 6.2:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
ADOPTED GP – YEAR 2030 CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
National City Boulevard	24 th Street	30 th Street	Arterial	4	40,000	22,800	C
National City Boulevard	30 th Street	35 th Street	Arterial	4	40,000	22,800	C
D Avenue	Division Street	4 th Street	Collector	2	10,000	4,900	B
D Avenue	4 th Street	8 th Street	Collector	2	10,000	8,200	D
D Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	6,400	C
D Avenue	Plaza Boulevard	16 th Street	Collector	2	10,000	8,200	D
D Avenue	16 th Street	18 th Street	Collector	2	10,000	8,500	D
D Avenue	18 th Street	22 nd Street	Collector	2	10,000	6,100	C
D Avenue	22 nd Street	24 th Street	Collector	2	10,000	5,600	C
D Avenue	24 th Street	30 th Street	Collector	2	10,000	6,600	C
Highland Avenue	Delta Street	Division Street	Arterial	4	40,000	18,100	B
Highland Avenue	Division Street	4 th Street	Arterial	4	30,000	16,900	C
Highland Avenue	4 th Street	8 th Street	Arterial	4	30,000	16,200	C
Highland Avenue	8 th Street	Plaza Boulevard	Arterial	4	40,000	22,600	C
Highland Avenue	Plaza Boulevard	16 th Street	Arterial	4	40,000	20,000	B
Highland Avenue	16 th Street	18 th Street	Arterial	4	40,000	23,500	C
Highland Avenue	18 th Street	24 th Street	Arterial	4	30,000	21,600	D
Highland Avenue	24 th Street	30 th Street	Arterial	4	30,000	23,400	D
Highland Avenue	30 th Street	SR-54	Arterial	4	40,000	33,600	D
L Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	3,900	A
L Avenue	16 th Street	18 th Street	Collector	2	10,000	4,000	A
L Avenue	18 th Street	24 th Street	Collector	2	10,000	6,200	C
L Avenue	24 th Street	30 th Street	Collector	2	10,000	3,900	A
Palm Avenue	I-805	Division Street	Arterial	4	40,000	23,400	C
Palm Avenue	Division Street	4 th Street	Collector	2	10,000	15,300	F
Palm Avenue	4 th Street	8 th Street	Collector	2	10,000	13,100	F
Palm Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	12,400	F
Palm Avenue	Plaza Boulevard	16 th Street	Collector	2	10,000	11,500	F
Palm Avenue	16 th Street	18 th Street	Collector	2	10,000	8,300	D
Newell Street	18 th Street	Prospect Street	Collector	2	10,000	7,100	C
Grove Street	Prospect Street	Sweetwater Road	Collector	2	10,000	7,600	D
Euclid Avenue	Cervantes Avenue	Division Street	Arterial	4	30,000	12,600	B
Euclid Avenue	Division Street	4 th Street	Arterial	4	30,000	10,400	B
Euclid Avenue	4 th Street	8 th Street	Arterial	4	40,000	16,700	B

**TABLE 6.2:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
ADOPTED GP – YEAR 2030 CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Euclid Avenue	8 th Street	Plaza Boulevard	Arterial	4	30,000	15,900	C
Euclid Avenue	Plaza Boulevard	16 th Street	Arterial	4	30,000	14,300	C
Euclid Avenue	16 th Street	18 th Street	Arterial	4	30,000	8,800	A
Euclid Avenue	18 th Street	24 th Street	Arterial	4	30,000	9,400	A
Euclid Avenue	24 th Street	Sweetwater Road	Arterial	4	30,000	13,200	B
Harbison Avenue	Division Street	4 th Street	Collector	2	10,000	4,400	B
Harbison Avenue	4 th Street	8 th Street	Collector	2	10,000	4,000	A
Harbison Avenue	8 th Street	Plaza Boulevard	Collector	4	20,000	11,200	C
Harbison Avenue	Plaza Boulevard	16 th Street	Collector	2	10,000	5,800	C
Plaza Bonita Road	Sweetwater Road	Bonita Mesa Road	Arterial	4	40,000	18,900	B
Plaza Bonita Center Way	SR-54	Sweetwater Road	Arterial	4	40,000	27,400	C
Division Street	National City Boulevard	D Avenue	Collector	2+1	15,000	12,000	D
Division Street	D Avenue	Highland Avenue	Collector	2	10,000	12,200	F
Division Street	Highland Avenue	Palm Avenue	Arterial	4	30,000	10,800	B
Division Street	Palm Avenue	Euclid Avenue	Arterial	4	40,000	18,300	B
Division Street	Euclid Avenue	Harbison Avenue	Arterial	4	30,000	15,500	C
4 th Street	National City Boulevard	D Avenue	Collector	2	10,000	9,700	E
4 th Street	D Avenue	Highland Avenue	Collector	2	10,000	7,900	D
4 th Street	Highland Avenue	Palm Avenue	Collector	2	10,000	7,700	D
4 th Street	Palm Avenue	Euclid Avenue	Collector	2	10,000	9,200	E
4 th Street	Euclid Avenue	Harbison Avenue	Collector	2	10,000	9,100	E
8 th Street	Harbor Drive	I-5	Arterial	4	30,000	13,900	B
8 th Street	I-5	National City Boulevard	Arterial	4	40,000	29,700	C
8 th Street	National City Boulevard	D Avenue	Collector	2+1	15,000	14,800	E
8 th Street	D Avenue	Highland Avenue	Collector	2+1	15,000	9,200	C
8 th Street	Highland Avenue	Palm Avenue	Arterial	4	30,000	20,200	D
8 th Street	Palm Avenue	Euclid Avenue	Arterial	4	30,000	19,700	C
8 th Street	Euclid Avenue	Harbison Avenue	Arterial	4	30,000	16,900	C
8 th Street	Harbison Avenue	Paradise Valley Road	Arterial	4	40,000	15,000	C
Plaza Boulevard	Coolidge Avenue	Hoover Avenue	Collector	2	10,000	9,900	E
Plaza Boulevard	Hoover Avenue	National City Boulevard	Collector	4	20,000	12,200	C

**TABLE 6.2:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
ADOPTED GP – YEAR 2030 CONDITIONS**

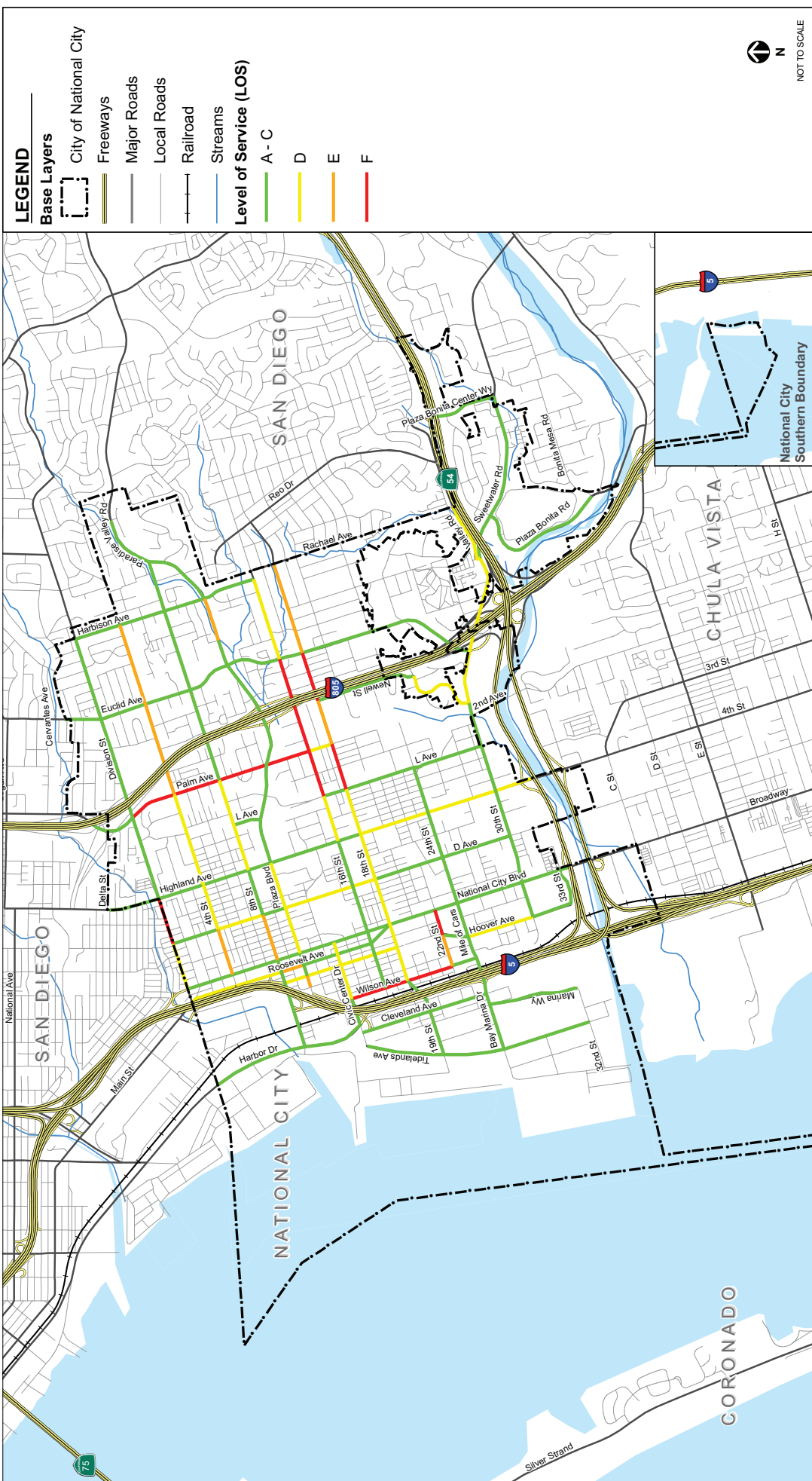
Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Plaza Boulevard	National City Boulevard	D Avenue	Arterial	4	30,000	21,100	D
Plaza Boulevard	D Avenue	Highland Avenue	Arterial	4	30,000	20,400	D
Plaza Boulevard	Highland Avenue	Palm Avenue	Arterial	6	50,000	20,300	B
Plaza Boulevard	Palm Avenue	I-805	Arterial	6	50,000	32,400	C
Plaza Boulevard	I-805	Euclid Avenue	Arterial	6	50,000	37,700	C
Plaza Boulevard	Euclid Avenue	School Xing	Arterial	4	40,000	29,800	C
Plaza Boulevard	School Xing	Harbison Avenue	Arterial	4	30,000	26,700	E
Plaza Boulevard	Harbison Avenue	Paradise Valley Road	Arterial	4	40,000	27,200	C
Paradise Valley Road	8 th Street	Plaza Entrada	Arterial	4	40,000	28,800	C
Civic Center Drive	Harbor Drive	Wilson Avenue	Collector	2	10,000	6,800	C
Civic Center Drive	Wilson Avenue	National City Boulevard	Collector	2	10,000	7,800	D
16 th Street	Wilson Avenue	National City Boulevard	Collector	2	10,000	5,500	B
16 th Street	National City Boulevard	D Avenue	Collector	4	20,000	5,900	A
16 th Street	D Avenue	Highland Avenue	Collector	4	20,000	7,400	B
16 th Street	Highland Avenue	L Avenue	Collector	2	10,000	8,300	D
16 th Street	L Avenue	Palm Avenue	Collector	2	10,000	10,700	F
16 th Street	Palm Avenue	Euclid Avenue	Collector	2	10,000	10,200	F
16 th Street	Euclid Avenue	Harbison Avenue	Collector	2	10,000	8,300	D
18 th Street	Wilson Avenue	National City Boulevard	Collector	2	10,000	8,800	D
18 th Street	National City Boulevard	D Avenue	Collector	2	10,000	8,700	D
18 th Street	D Avenue	Highland Avenue	Collector	2	10,000	8,700	D
18 th Street	Highland Avenue	L Avenue	Collector	2	10,000	8,700	D
18 th Street	L Avenue	Palm Avenue	Collector	2	10,000	11,800	F
18 th Street	Palm Avenue	Newell Street	Collector	2	10,000	9,500	E
18 th Street	Newell Street	Euclid Avenue	Collector	2	10,000	10,100	F
18 th Street	Euclid Avenue	Rachael Avenue	Collector	2	10,000	9,600	E
19 th Street	Tidelands Avenue	Wilson Avenue	Collector	4	20,000	7,400	B
22 nd Street	Wilson Avenue	Hoover Avenue	Collector	2	10,000	9,600	E
22 nd Street	Hoover Avenue	National City Boulevard	Collector	2	10,000	12,000	F

**TABLE 6.2:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
ADOPTED GP – YEAR 2030 CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Bay Marina Drive	Tidelands Avenue	Marina Way	Collector	4	20,000	6,300	A
Bay Marina Drive	Marina Way	Cleveland Avenue	Arterial	4	30,000	12,100	B
Bay Marina Drive	Cleveland Avenue	I-5	Arterial	4	30,000	12,400	B
Mile of Cars Way	I-5	Wilson Avenue	Arterial	4	40,000	27,600	C
Mile of Cars Way	Wilson Avenue	Hoover Avenue	Arterial	4	40,000	22,600	C
Mile of Cars Way	Hoover Avenue	National City Boulevard	Arterial	4	40,000	15,800	B
24 th Street	National City Boulevard	D Avenue	Arterial	4	30,000	14,000	B
24 th Street	D Avenue	Highland Avenue	Arterial	4	30,000	8,800	A
24 th Street	Highland Avenue	L Avenue	Collector	2	10,000	5,100	B
30 th Street	Hoover Avenue	National City Boulevard	Collector	4	20,000	4,000	A
30 th Street	National City Boulevard	D Avenue	Arterial	4	30,000	10,100	B
30 th Street	D Avenue	Highland Avenue	Arterial	4	30,000	18,300	C
30 th Street	Highland Avenue	L Avenue	Arterial	4	40,000	24,600	C
30 th Street	L Avenue	2 nd Avenue	Arterial	4	40,000	22,900	C
Sweetwater Road	2 nd Avenue	Grove Street	Arterial	4	40,000	29,100	C
Sweetwater Road	Grove Street	I-805/Euclid Avenue	Arterial	4	40,000	32,400	D
Sweetwater Road	I-805/Euclid Avenue	Valley Road	Arterial	4	40,000	33,500	D
Sweetwater Road	Valley Road	Plaza Bonita Road	Arterial	6	50,000	26,900	B
Sweetwater Road	Plaza Bonita Road	Calmoor Street	Arterial	4	40,000	24,300	C
Sweetwater Road	Calmoor Street	Plaza Bonita Center Way	Arterial	4	30,000	19,600	C
33 rd Street	Hoover Avenue	National City Boulevard	Collector	2	10,000	4,200	B
Valley Road	Sweetwater Road	Calle Abajo	Collector	2	10,000	7,800	D

Source: City of National City, SANDAG, Fehr & Peers; September 2010

Note: Highlighted rows indicate substandard LOS E or F.



FEHR & PEERS
TRANSPORTATION CONSULTANTS

ADOPTED CIRCULATION ELEMENT ROADWAY LEVEL OF SERVICE
FIGURE 6-5

6.3.2 Proposed Circulation Element

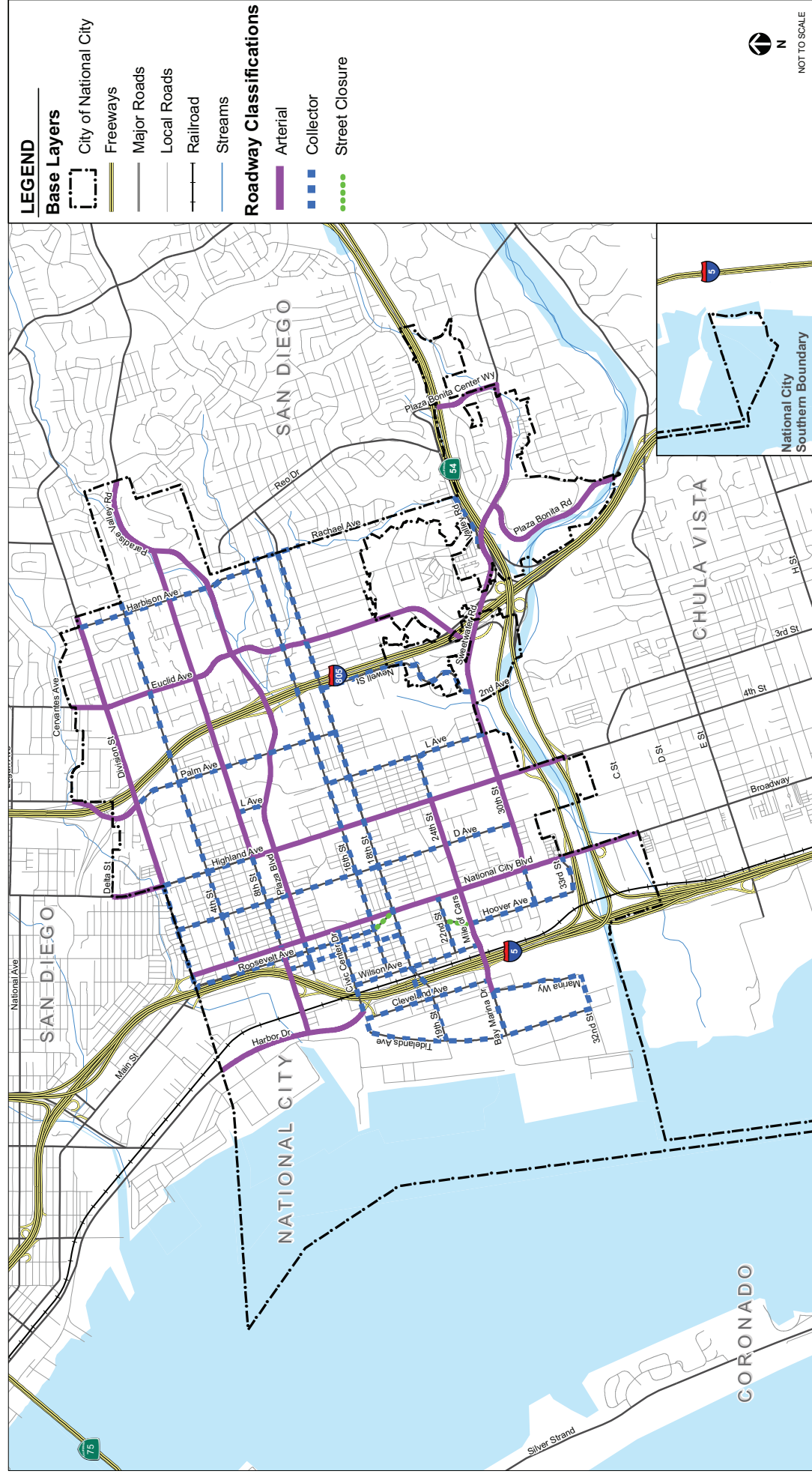
Figure 6-6 illustrates the City's proposed Circulation Element network and associated roadway functional classifications. In comparison to the currently adopted Circulation Element roadway network, the proposed network includes:

- Street conversion at Hoover Avenue, between 22nd Street and Mile of Cars Way to prohibit vehicular traffic;
- Street conversion at West Avenue, between 16th Street and 18th Street to prohibit vehicular traffic;
- Downgrade of Highland Avenue, between Division Street and 8th Street from a 4-lane Arterial to a 2-lane with two-way left-turn lane Collector;
- Downgrade of 8th Street, between Highland Avenue and Paradise Valley Road from a 4-lane Arterial to a 3-lane with two-way left-turn lane Arterial; and
- Downgrade of 16th Street, between National City Boulevard and Highland Avenue from a 4-lane Collector to a 2-lane with two-way left-turn lane Collector.

Level of Service was calculated for the key roadway segments to evaluate the future year 2030 traffic conditions under the Proposed Circulation Element. **Table 6.3** shows the results of roadway Level of Service analysis, while **Figure 6-7** displays the results in a mapped format. As shown, the following roadway segments (34 in total) are projected to operate at LOS E or F under future year 2030 conditions with the Proposed Circulation Element:

- Wilson Avenue, between Civic Center Drive and 18th Street (LOS F),
- Wilson Avenue, between 18th Street and 22nd Street (LOS F),
- Wilson Avenue, between 22nd Street and Mile of Cars Way (LOS F),
- Hoover Avenue, between 8th Street and 18th Street (LOS F),
- Roosevelt Avenue, between Division Street and 4th Street (LOS F),
- Roosevelt Avenue, between 4th Street and 8th Street (LOS F),
- Roosevelt Avenue, between 8th Street and Plaza Boulevard (LOS F),
- D Avenue, between Plaza Boulevard and 16th Street (LOS E),
- Palm Avenue, between Division Street and 4th Street (LOS F),
- Palm Avenue, between 4th Street and 8th Street (LOS F),
- Palm Avenue, between 8th Street and Plaza Boulevard (LOS F),
- Palm Avenue, between Plaza Boulevard and 16th Street (LOS F),
- Division Street, between D Avenue and Highland Avenue (LOS F),
- 4th Street, between National City Boulevard and D Avenue (LOS E),
- 4th Street, between Palm Avenue and Euclid Avenue (LOS E),

- 4th Street, between Euclid Avenue and Harbison Avenue (LOS F),
- 8th Street, between National City Boulevard and D Avenue (LOS F),
- Plaza Boulevard, between Coolidge Avenue and Hoover Avenue (LOS F),
- Civic Center Drive, between Harbor Drive and Wilson Avenue (LOS E),
- Civic Center Drive, between Wilson Avenue and National City Boulevard (LOS E),
- 16th Street, between Wilson Avenue and National City Boulevard (LOS E),
- 16th Street, between L Avenue and Palm Avenue (LOS F),
- 16th Street, between Palm Avenue and Euclid Avenue (LOS F),
- 16th Street, between Euclid Avenue and Harbison Avenue (LOS F),
- 18th Street, between Wilson Avenue and National City Boulevard (LOS F),
- 18th Street, between National City Boulevard and D Avenue (LOS F),
- 18th Street, between D Avenue and Highland Avenue (LOS E),
- 18th Street, between Highland Avenue and L Avenue (LOS E),
- 18th Street, between L Avenue and Palm Avenue (LOS F),
- 18th Street, between Palm Avenue and Newell Street (LOS E),
- 18th Street, between Newell Street and Euclid Avenue (LOS F),
- 18th Street, between Euclid Avenue and Rachael Avenue (LOS F),
- 22nd Street, between Wilson Avenue and Hoover Avenue (LOS E), and
- 22nd Street, between Hoover Avenue and National City Boulevard (LOS F).



**TABLE 6.3:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
PROPOSED GP – YEAR 2030 CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Harbor Drive	Division Street	8 th Street	Arterial	4	40,000	28,400	C
Harbor Drive	8 th Street	Civic Center Drive	Arterial	4	40,000	21,300	C
Tidelands Avenue	Civic Center Drive	19 th Street	Collector	2	10,000	6,500	C
Tidelands Avenue	19 th Street	Bay Marina Drive	Collector	2	10,000	5,000	B
Tidelands Avenue	Bay Marina Drive	32 nd Street	Collector	2	10,000	2,800	A
Marina Way	Bay Marina Drive	32 nd Street	Collector	2+1	15,000	12,200	D
Cleveland Avenue	Civic Center Drive	19 th Street	Collector	2+1	15,000	6,800	B
Cleveland Avenue	19 th Street	Bay Marina Drive	Collector	2+1	15,000	7,300	C
Wilson Avenue	Civic Center Drive	18 th Street	Collector	2	10,000	19,400	F
Wilson Avenue	18 th Street	22 nd Street	Collector	2	10,000	18,600	F
Wilson Avenue	22 nd Street	Mile of Cars Way	Collector	2	10,000	12,500	F
Hoover Avenue	8 th Street	18 th Street	Collector	2	10,000	10,500	F
Hoover Avenue	22 nd Street	Mile of Cars Way	Street Closure				
Hoover Avenue	Miles of Cars Way	30 th Street	Collector	4	20,000	14,400	D
Hoover Avenue	30 th Street	33 rd Street	Collector	2	10,000	4,300	B
Roosevelt Avenue	Division Street	4 th Street	Collector	2	10,000	10,700	F
Roosevelt Avenue	4 th Street	8 th Street	Collector	2	10,000	10,700	F
Roosevelt Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	10,500	F
Roosevelt Avenue	Plaza Boulevard	Civic Center Drive	Collector	2	10,000	8,600	D
Roosevelt Avenue	Civic Center Drive	16 th Street	Collector	2	10,000	3,500	A
West Avenue	16 th Street	18 th Street	Street Closure				
National City Boulevard	Division Street	4 th Street	Arterial	4	40,000	19,500	B
National City Boulevard	4 th Street	8 th Street	Arterial	4	40,000	20,200	B
National City Boulevard	8 th Street	Plaza Boulevard	Arterial	4	40,000	22,600	C
National City Boulevard	Plaza Boulevard	Civic Center Drive	Arterial	4	40,000	23,600	C
National City Boulevard	Civic Center Drive	16 th Street	Arterial	4	40,000	24,300	C
National City Boulevard	16 th Street	18 th Street	Arterial	4	40,000	15,700	B
National City Boulevard	18 th Street	22 nd Street	Arterial	4	40,000	19,000	B
National City Boulevard	22 nd Street	24 th Street	Arterial	4	40,000	21,100	C

**TABLE 6.3:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
PROPOSED GP – YEAR 2030 CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
National City Boulevard	24 th Street	30 th Street	Arterial	4	40,000	24,000	C
National City Boulevard	30 th Street	35 th Street	Arterial	4	40,000	24,500	C
D Avenue	Division Street	4 th Street	Collector	2	10,000	5,100	B
D Avenue	4 th Street	8 th Street	Collector	2	10,000	8,400	D
D Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	6,200	C
D Avenue	Plaza Boulevard	16 th Street	Collector	2	10,000	9,100	E
D Avenue	16 th Street	18 th Street	Collector	2	10,000	8,400	D
D Avenue	18 th Street	22 nd Street	Collector	2	10,000	6,500	C
D Avenue	22 nd Street	24 th Street	Collector	2	10,000	8,000	D
D Avenue	24 th Street	30 th Street	Collector	2	10,000	7,600	D
Highland Avenue	Delta Street	Division Street	Arterial	4	40,000	16,400	B
Highland Avenue	Division Street	4 th Street	Collector	2+1	15,000	11,800	D
Highland Avenue	4 th Street	8 th Street	Collector	2+1	15,000	12,400	D
Highland Avenue	8 th Street	Plaza Boulevard	Arterial	4	40,000	17,700	B
Highland Avenue	Plaza Boulevard	16 th Street	Arterial	4	40,000	17,700	B
Highland Avenue	16 th Street	18 th Street	Arterial	4	40,000	22,600	C
Highland Avenue	18 th Street	24 th Street	Arterial	4	30,000	19,900	C
Highland Avenue	24 th Street	30 th Street	Arterial	4	30,000	23,000	D
Highland Avenue	30 th Street	SR-54	Arterial	4	40,000	33,200	D
L Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	3,900	A
L Avenue	16 th Street	18 th Street	Collector	2	10,000	4,100	B
L Avenue	18 th Street	24 th Street	Collector	2	10,000	6,100	C
L Avenue	24 th Street	30 th Street	Collector	2	10,000	3,400	A
Palm Avenue	I-805	Division Street	Arterial	4	40,000	22,700	C
Palm Avenue	Division Street	4 th Street	Collector	2	10,000	15,800	F
Palm Avenue	4 th Street	8 th Street	Collector	2	10,000	12,000	F
Palm Avenue	8 th Street	Plaza Boulevard	Collector	2	10,000	11,000	F
Palm Avenue	Plaza Boulevard	16 th Street	Collector	2	10,000	11,800	F
Palm Avenue	16 th Street	18 th Street	Collector	2	10,000	8,100	D
Newell Street	18 th Street	Prospect Street	Collector	2	10,000	7,300	C
Grove Street	Prospect Street	Sweetwater Road	Collector	2	10,000	7,900	D
Euclid Avenue	Cervantes Avenue	Division Street	Arterial	4	30,000	11,800	B
Euclid Avenue	Division Street	4 th Street	Arterial	4	30,000	10,000	A
Euclid Avenue	4 th Street	8 th Street	Arterial	4	40,000	16,300	B

**TABLE 6.3:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
PROPOSED GP – YEAR 2030 CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Euclid Avenue	8 th Street	Plaza Boulevard	Arterial	4	30,000	16,300	C
Euclid Avenue	Plaza Boulevard	16 th Street	Arterial	4	30,000	17,900	C
Euclid Avenue	16 th Street	18 th Street	Arterial	4	30,000	8,800	A
Euclid Avenue	18 th Street	24 th Street	Arterial	4	30,000	10,200	B
Euclid Avenue	24 th Street	Sweetwater Road	Arterial	4	30,000	13,400	B
Harbison Avenue	Division Street	4 th Street	Collector	2	10,000	4,200	B
Harbison Avenue	4 th Street	8 th Street	Collector	2	10,000	3,600	A
Harbison Avenue	8 th Street	Plaza Boulevard	Collector	4	20,000	10,600	C
Harbison Avenue	Plaza Boulevard	16 th Street	Collector	2	10,000	6,100	C
Plaza Bonita Road	Sweetwater Road	Bonita Mesa Road	Arterial	4	40,000	18,700	B
Plaza Bonita Center Way	SR-54	Sweetwater Road	Arterial	4	40,000	26,800	C
Division Street	National City Boulevard	D Avenue	Collector	2+1	15,000	11,400	D
Division Street	D Avenue	Highland Avenue	Collector	2	10,000	10,700	F
Division Street	Highland Avenue	Palm Avenue	Arterial	4	30,000	9,800	A
Division Street	Palm Avenue	Euclid Avenue	Arterial	4	40,000	16,400	B
Division Street	Euclid Avenue	Harbison Avenue	Arterial	4	30,000	15,000	C
4 th Street	National City Boulevard	D Avenue	Collector	2	10,000	9,800	E
4 th Street	D Avenue	Highland Avenue	Collector	2	10,000	8,600	D
4 th Street	Highland Avenue	Palm Avenue	Collector	2	10,000	7,900	D
4 th Street	Palm Avenue	Euclid Avenue	Collector	2	10,000	9,200	E
4 th Street	Euclid Avenue	Harbison Avenue	Collector	2	10,000	11,100	F
8 th Street	Harbor Drive	I-5	Arterial	4	30,000	14,900	C
8 th Street	I-5	National City Boulevard	Arterial	4	40,000	30,400	D
8 th Street	National City Boulevard	D Avenue	Collector	2+1	15,000	17,600	F
8 th Street	D Avenue	Highland Avenue	Collector	2+1	15,000	7,800	C
8 th Street	Highland Avenue	Palm Avenue	Arterial	3+1	25,000	16,500	C
8 th Street	Palm Avenue	Euclid Avenue	Arterial	3+1	25,000	19,800	D
8 th Street	Euclid Avenue	Harbison Avenue	Arterial	3+1	25,000	17,300	D
8 th Street	Harbison Avenue	Paradise Valley Road	Arterial	3+1	25,000	12,800	C
Plaza Boulevard	Coolidge Avenue	Hoover Avenue	Collector	2	10,000	10,300	F
Plaza Boulevard	Hoover Avenue	National City Boulevard	Collector	4	20,000	12,700	C

**TABLE 6.3:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
PROPOSED GP – YEAR 2030 CONDITIONS**

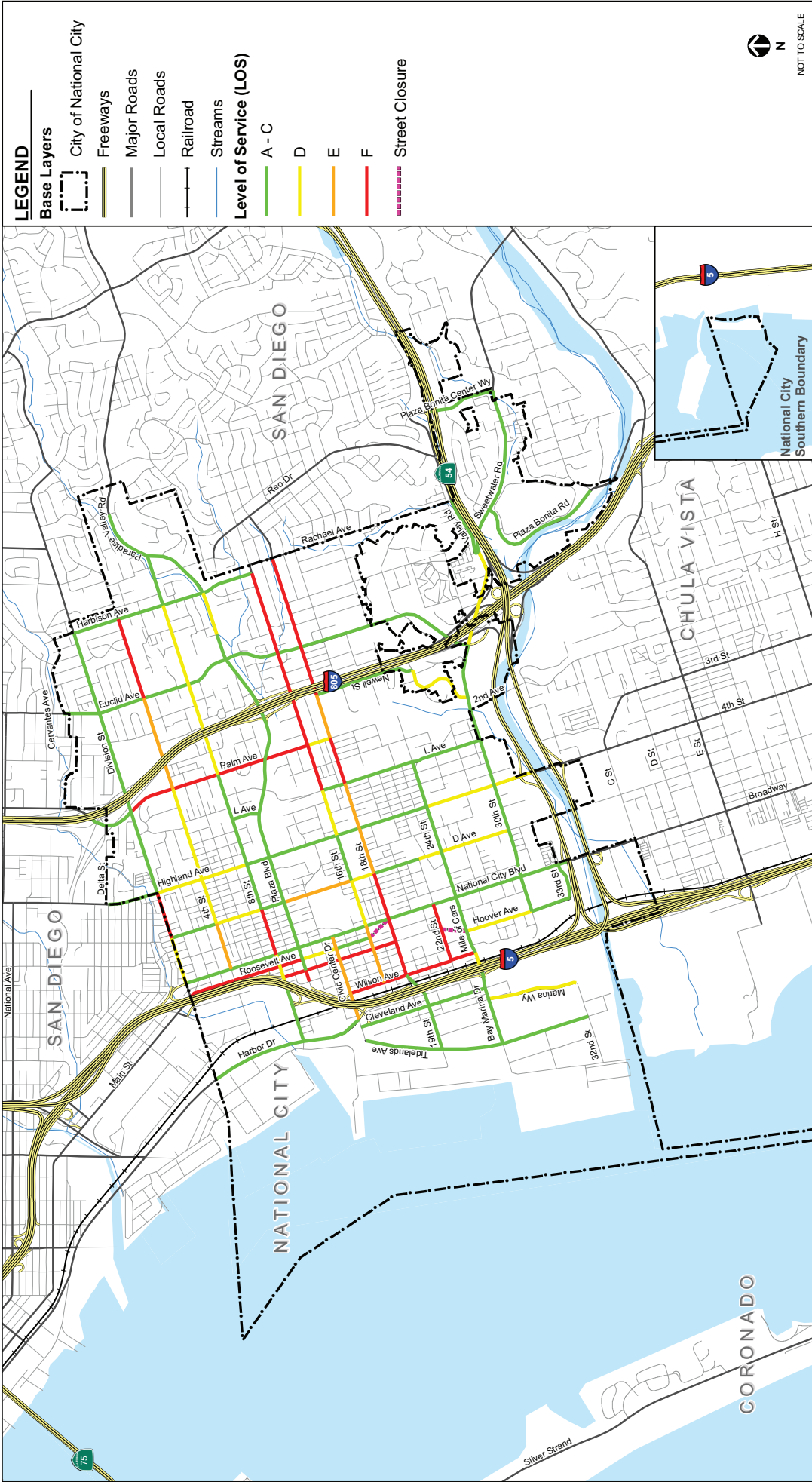
Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Plaza Boulevard	National City Boulevard	D Avenue	Arterial	4	30,000	19,900	C
Plaza Boulevard	D Avenue	Highland Avenue	Arterial	4	30,000	17,600	C
Plaza Boulevard	Highland Avenue	Palm Avenue	Arterial	6	50,000	19,200	A
Plaza Boulevard	Palm Avenue	I-805	Arterial	6	50,000	31,400	C
Plaza Boulevard	I-805	Euclid Avenue	Arterial	6	50,000	37,800	C
Plaza Boulevard	Euclid Avenue	School Xing	Arterial	4	40,000	28,800	C
Plaza Boulevard	School Xing	Harbison Avenue	Arterial	4	30,000	24,900	D
Plaza Boulevard	Harbison Avenue	Paradise Valley Road	Arterial	4	40,000	25,900	C
Paradise Valley Road	8 th Street	Plaza Entrada	Arterial	4	40,000	27,500	C
Civic Center Drive	Harbor Drive	Wilson Avenue	Collector	2	10,000	9,300	E
Civic Center Drive	Wilson Avenue	National City Boulevard	Collector	2	10,000	9,500	E
16 th Street	Wilson Avenue	National City Boulevard	Collector	2	10,000	9,600	E
16 th Street	National City Boulevard	D Avenue	Collector	2+1	15,000	10,700	D
16 th Street	D Avenue	Highland Avenue	Collector	2+1	15,000	10,000	C
16 th Street	Highland Avenue	L Avenue	Collector	2	10,000	8,400	D
16 th Street	L Avenue	Palm Avenue	Collector	2	10,000	11,800	F
16 th Street	Palm Avenue	Euclid Avenue	Collector	2	10,000	11,000	F
16 th Street	Euclid Avenue	Harbison Avenue	Collector	2	10,000	12,100	F
18 th Street	Wilson Avenue	National City Boulevard	Collector	2	10,000	15,100	F
18 th Street	National City Boulevard	D Avenue	Collector	2	10,000	10,100	F
18 th Street	D Avenue	Highland Avenue	Collector	2	10,000	9,600	E
18 th Street	Highland Avenue	L Avenue	Collector	2	10,000	9,900	E
18 th Street	L Avenue	Palm Avenue	Collector	2	10,000	13,200	F
18 th Street	Palm Avenue	Newell Street	Collector	2	10,000	9,500	E
18 th Street	Newell Street	Euclid Avenue	Collector	2	10,000	10,800	F
18 th Street	Euclid Avenue	Rachael Avenue	Collector	2	10,000	12,600	F
19 th Street	Tidelands Avenue	Wilson Avenue	Collector	4	20,000	9,900	B
22 nd Street	Wilson Avenue	Hoover Avenue	Collector	2	10,000	15,700	F
22 nd Street	Hoover Avenue	National City Boulevard	Collector	2	10,000	15,700	F

**TABLE 6.3:
ROADWAY AVERAGE DAILY TRAFFIC (ADT) AND LEVEL OF SERVICE (LOS)
PROPOSED GP – YEAR 2030 CONDITIONS**

Street	From	To	Classification	Lanes	ADT Capacity	ADT	LOS
Bay Marina Drive	Tidelands Avenue	Marina Way	Collector	4	20,000	6,700	A
Bay Marina Drive	Marina Way	Cleveland Avenue	Arterial	4	30,000	16,600	C
Bay Marina Drive	Cleveland Avenue	I-5	Arterial	4	30,000	17,900	C
Mile of Cars Way	I-5	Wilson Avenue	Arterial	4	40,000	32,400	D
Mile of Cars Way	Wilson Avenue	Hoover Avenue	Arterial	4	40,000	22,800	C
Mile of Cars Way	Hoover Avenue	National City Boulevard	Arterial	4	40,000	17,000	B
24 th Street	National City Boulevard	D Avenue	Arterial	4	30,000	17,300	C
24 th Street	D Avenue	Highland Avenue	Arterial	4	30,000	10,300	B
24 th Street	Highland Avenue	L Avenue	Collector	2	10,000	5,600	C
30 th Street	Hoover Avenue	National City Boulevard	Collector	4	20,000	4,600	A
30 th Street	National City Boulevard	D Avenue	Arterial	4	30,000	8,900	A
30 th Street	D Avenue	Highland Avenue	Arterial	4	30,000	18,500	C
30 th Street	Highland Avenue	L Avenue	Arterial	4	40,000	21,100	C
30 th Street	L Avenue	2 nd Avenue	Arterial	4	40,000	20,800	B
Sweetwater Road	2 nd Avenue	Grove Street	Arterial	4	40,000	27,100	C
Sweetwater Road	Grove Street	I-805/Euclid Avenue	Arterial	4	40,000	27,100	C
Sweetwater Road	I-805/Euclid Avenue	Valley Road	Arterial	4	40,000	31,900	D
Sweetwater Road	Valley Road	Plaza Bonita Road	Arterial	6	50,000	26,600	B
Sweetwater Road	Plaza Bonita Road	Calmoor Street	Arterial	4	40,000	24,000	C
Sweetwater Road	Calmoor Street	Plaza Bonita Center Way	Arterial	4	30,000	19,200	C
33 rd Street	Hoover Avenue	National City Boulevard	Collector	2	10,000	4,300	B
Valley Road	Sweetwater Road	Calle Abajo	Collector	2	10,000	7,400	C

Source: City of National City, SANDAG, Fehr & Peers; September 2010

Note: Highlighted rows indicate substandard LOS E or F.



FEHR & PEERS
TRANSPORTATION CONSULTANTS

PROPOSED CIRCULATION ELEMENT ROADWAY LEVEL OF SERVICE
FIGURE 6-7

6.3.3 Deficiency/Improvement Identification

Table 6.4 lists all 34 deficient roadway segments in the City of National City under the proposed Circulation Element. This table also includes forecast ADT, LOS, roadway classification, and mitigated classification. The roadway classification represents the Circulation Element Update identified classification and the mitigated roadway classification represents the classification that would be required to mitigate the identified deficiency.

TABLE 6.4: DEFICIENT FACILITIES AND RECOMMENDED MITIGATION MEASURES PROPOSED CIRCULATION ELEMENT					
Roadway	Segment Limits	Classification	ADT	LOS	Mitigated Classification
Wilson Avenue	Between Civic Center Dr and 18 th St (Community Corridor)	Collector, 2-Ln	19,400	F	Arterial, 4-Ln
Wilson Avenue	Between 18 th St and 22 nd St (Community Corridor)	Collector, 2-Ln	18,600	F	Arterial, 4-Ln
Wilson Avenue	Between 22 nd St and Mile of Cars Wy	Collector, 2-Ln	12,500	F	Collector, 2-Ln with two-way left-turn lane
Hoover Avenue	Between 8 th St and 18 th St	Collector, 2-Ln	10,500	F	Collector, 2-Ln with two-way left-turn lane
Roosevelt Avenue	Between Division St and 4 th St	Collector, 2-Ln	10,700	F	Collector, 2-Ln with two-way left-turn lane
Roosevelt Avenue	Between 4 th St and 8 th St	Collector, 2-Ln	10,700	F	Collector, 2-Ln with two-way left-turn lane
Roosevelt Avenue	Between 8 th St and Plaza Blvd (Community Corridor)	Collector, 2-Ln	10,500	F	Collector, 2-Ln with two-way left-turn lane
D Avenue	Between Plaza Blvd and 16 th St (Community Corridor)	Collector, 2-Ln	9,100	E	Collector, 2-Ln with two-way left-turn lane
Palm Avenue	Between Division St and 4 th St	Collector, 2-Ln	15,800	F	Collector, 4-Ln
Palm Avenue	Between 4 th St and 8 th St (Community Corridor)	Collector, 2-Ln	12,000	F	Collector, 2-Ln with two-way left-turn lane
Palm Avenue	Between 8 th St and Plaza Blvd (Community Corridor)	Collector, 2-Ln	11,000	F	Collector, 2-Ln with two-way left-turn lane

**TABLE 6.4:
DEFICIENT FACILITIES AND RECOMMENDED MITIGATION MEASURES
PROPOSED CIRCULATION ELEMENT**

Palm Avenue	Between Plaza Blvd and 16 th St (Community Corridor)	Collector, 2-Ln	11,800	F	Collector, 2-Ln with two-way left-turn lane
Division Street	Between D Ave and Highland Ave	Collector, 2-Ln	10,700	F	Collector, 2-Ln with two-way left-turn lane
4 th Street	Between National City Blvd and D Ave (Community Corridor)	Collector, 2-Ln	9,800	E	Collector, 2-Ln with two-way left-turn lane
4 th Street	Between Palm Ave and Euclid Ave (Community Corridor)	Collector, 2-Ln	9,200	E	Collector, 2-Ln with two-way left-turn lane
4 th Street	Between Euclid Ave and Harbison Ave (Community Corridor)	Collector, 2-Ln	11,100	F	Collector, 2-Ln with two-way left-turn lane
8 th Street	Between National City Blvd and D Ave (Community Corridor)	Collector, 2+1-Ln	17,600	F	Arterial, 4-Ln
Plaza Boulevard	Between Coolidge Ave and Hoover Ave (Community Corridor)	Collector, 2-Ln	10,300	F	Collector, 2-Ln with two-way left-turn lane
Civic Center Drive	Between Harbor Dr and Wilson Ave	Collector, 2-Ln	9,300	E	Collector, 2-Ln with two-way left-turn lane
Civic Center Drive	Between Wilson Ave and National City Blvd (Community Corridor)	Collector, 2-Ln	9,500	E	Collector, 2-Ln with two-way left-turn lane
16 th Street	Between Wilson Ave and National City Blvd	Collector, 2-Ln	9,600	E	Collector, 2-Ln with two-way left-turn lane
16 th Street	Between L Ave and Palm Ave (Community Corridor)	Collector, 2-Ln	11,800	F	Collector, 2-Ln with two-way left-turn lane
16 th Street	Between Palm Ave and Euclid Ave (Community Corridor)	Collector, 2-Ln	11,000	F	Collector, 2-Ln with two-way left-turn lane
16 th Street	Between Euclid Ave and Harbison Ave (Community Corridor)	Collector, 2-Ln	12,100	F	Collector, 2-Ln with two-way left-turn lane

**TABLE 6.4:
DEFICIENT FACILITIES AND RECOMMENDED MITIGATION MEASURES
PROPOSED CIRCULATION ELEMENT**

18 th Street	Between Wilson Ave and National City Blvd (Community Corridor)	Collector, 2-Ln	15,100	F	Collector, 4-Ln
18 th Street	Between National City Blvd and D Ave (Community Corridor)	Collector, 2-Ln	10,100	F	Collector, 2-Ln with two-way left-turn lane
18 th Street	Between D Ave and Highland Ave (Community Corridor)	Collector, 2-Ln	9,600	E	Collector, 2-Ln with two-way left-turn lane
18 th Street	Between Highland Ave and L Ave (Community Corridor)	Collector, 2-Ln	9,900	E	Collector, 2-Ln with two-way left-turn lane
18 th Street	Between L Ave and Palm Ave (Community Corridor)	Collector, 2-Ln	13,200	F	Collector, 4-Ln
18 th Street	Between Palm Ave and Newell St (Community Corridor)	Collector, 2-Ln	9,500	E	Collector, 2-Ln with two-way left-turn lane
18 th Street	Between Newell St and Euclid Ave (Community Corridor)	Collector, 2-Ln	10,800	F	Collector, 2-Ln with two-way left-turn lane
18 th Street	Between Euclid Ave and Rachael Ave	Collector, 2-Ln	12,600	F	Collector, 2-Ln with two-way left-turn lane
22 nd Street	Between Wilson Ave and Hoover Ave (Community Corridor)	Collector, 2-Ln	15,700	F	Collector, 4-Ln
22 nd Street	Between Hoover Ave and National City Blvd (Community Corridor)	Collector, 2-Ln	15,700	F	Collector, 4-Ln

Source: Fehr & Peers, January 2011

To widen these roadways further, sidewalks would need to be removed or reduced in width, which would result in impacts to non-vehicular modes of transit (pedestrians and bicyclists). Recent revisions in planning and environmental law recognize the importance of planning for multiple modes of transportation, which provide for the needs of all users (including pedestrians, bicyclists, mass transit riders, and motorists. (See AB 1358 [2008]; SB 375 [2008].) As such, these mitigation measures are also considered infeasible due to policy considerations. Another option for roadway widening would involve the expansion of current Right-Of-Way through additional property acquisition. Property acquisitions, however, are considered environmentally, financially, and socially infeasible. Property acquisition would require demolition of existing buildings which would generate additional environmental impacts associated with air quality, noise, GHGs, as well as continuing to promote vehicular use.

Furthermore, widening of these roadway segments would also create a less pedestrian oriented environment and would thus create additional impacts to this alternative mode of transportation. For these reasons, mitigation measures at these roadway segments are considered infeasible. Therefore, because no feasible mitigation exists, the impact at these 34 roadway segments remains *significant and unavoidable*.

6.3.4 Potential Impacts to Adjacent Jurisdictions

The purpose of this section is to document potential significant traffic impacts on regional arterials located in adjacent jurisdictions, as a result of the City of National City's proposed Circulation Element.

Study roadway segments from adjacent jurisdictions were selected based upon location and connectivity to the roadway network within the City of National City, as shown below:

City of San Diego

- Harbor Drive, from Wabash Blvd to Division St
- Main Street, from Wabash Blvd to Division St
- 43rd Street, from Logan Ave to Division St
- 47th Street, from Logan Ave to I-805
- Euclid Avenue, from Logan Ave to Cervantes Ave
- Paradise Valley Road, from Munda Rd to Woodman St

City of Chula Vista

- Broadway, from SR-54 to E St
- 4th Avenue, from SR-54 to E St
- Plaza Bonita Road, from Bonita Mesa Rd to Bonita Rd

Unincorporated County of San Diego

- Sweetwater Road, from Plaza Bonita Center Way to Willow St

Traffic volumes and resulting Levels of Service (LOS) on the studied key roadway segments were analyzed and compared under each of the following three (3) conditions:

- Existing Conditions – This study condition includes existing traffic volumes on the respective roadway segments in the various jurisdictions as currently constructed.
- City of National City Adopted General Plan – This condition includes land uses and roadway network consistent with the buildout of the currently adopted City of National City General Plan.
- City of National City Proposed General Plan – This condition includes land uses and roadway network consistent with buildout of the proposed City of National City General Plan.

Approach and Methodology

Detailed information on the roadway segment analysis methodologies, standards, and thresholds are discussed in the following section.

Roadway Segment Level of Service Standards and Thresholds

Roadway segment LOS standards and thresholds provide the basis for analysis of arterial roadway segment performance. The analysis of roadway segment LOS was based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast Average Daily Traffic (ADT) volumes.

Methodologies for ascertaining roadway LOS vary amongst the jurisdictions. **Tables 6.5, 6.6 and 6.7** display the roadway segment LOS standards and thresholds for the City of San Diego, City of Chula Vista, and County of San Diego, respectively.

TABLE 6.5: CITY OF SAN DIEGO CIRCULATION ELEMENT ROADWAY CLASSIFICATIONS CAPACITY AND LEVEL OF SERVICE STANDARDS					
Roadway Functional Classification	Level of Service (in ADT)				
	A	B	C	D	E
Expressway (6-lane)	< 30,000	< 42,000	< 60,000	< 70,000	< 80,000
Prime Arterial (6-lane)	< 25,000	< 35,000	< 50,000	< 55,000	< 60,000
Major Arterial (6-lane, divided)	< 20,000	< 28,000	< 40,000	< 45,000	< 50,000
Major Arterial (4-lane, divided)	< 15,000	< 21,000	< 30,000	< 35,000	< 40,000
Secondary Arterial / Collector (4-lane w/ center lane)	< 10,000	< 14,000	< 20,000	< 25,000	< 30,000
Collector (4-lane w/o center lane)	< 5,000	< 7,000	< 10,000	< 13,000	< 15,000
Collector (2-lane w/ continuous left-turn lane)					
Collector (2-lane no fronting property)	< 4,000	< 5,500	< 7,500	< 9,000	< 10,000
Collector (2-lane w/ commercial fronting)	< 2,500	< 3,500	< 5,000	< 6,500	< 8,000
Collector (2-lane multi-family)					
Sub-Collector (2-lane single-family)	-	-	< 2,200	-	-
Source: SANTEC/ITE Guidelines for Traffic Impact Studies (TIS)					
Note: Bold numbers indicate the ADT thresholds for acceptable LOS.					

**TABLE 6.6:
CITY OF CHULA VISTA
CIRCULATION ELEMENT ROADWAY CLASSIFICATIONS
CAPACITY AND LEVEL OF SERVICE STANDARDS**

Roadway Functional Classification	Level of Service (in ADT)				
	A	B	C	D	E
Non-Urban Core					
Expressway (7 or 8-lane)	< 52,500	< 61,300	< 70,000	< 78,800	< 87,500
Prime Arterial (6-lane)	< 37,500	< 43,800	< 50,000	< 56,300	< 62,500
Major Street (6-lane)	< 30,000	< 35,000	< 40,000	< 45,000	< 50,000
Major Street (4-lane)	< 22,500	< 26,300	< 30,000	< 33,800	< 37,500
Town Center Arterial	< 37,500	< 43,800	< 50,000	< 56,300	< 62,500
Class I Collector (4-lane)	< 16,500	< 19,300	< 22,000	< 24,800	< 27,500
Class II Collector (3-lane)	< 9,000	< 10,500	< 12,000	< 13,500	< 15,000
Class III Collector (2-lane)	< 5,600	< 6,600	< 7,500	< 8,400	< 9,400
Urban Core					
Gateway Street (6-lane)	-	-	-	< 61,200	-
Gateway Street (4-lane)	-	-	-	< 43,200	-
Urban Arterial (4-lane)	-	-	-	< 37,800	-
Commercial Boulevard (4-lane)	-	-	-	< 33,750	-
Downtown Promenade (2/4-lane)	-	-	-	< 14,400	-
Source: City of Chula Vista					
Note: Bold numbers indicate the ADT thresholds for acceptable LOS.					

**TABLE 6.7:
COUNTY OF SAN DIEGO
PROPOSED ROADWAY SEGMENT DAILY CAPACITY AND LEVEL OF SERVICE STANDARDS**

No.	Travel Lanes	Design Speed	Road Classification	Level of Service (in ADT)				
				A	B	C	D	E
6.1	6	65 mph	Expressway	36,000	54,000	70,000	86,000	108,000
6.2	6	65 mph	Prime Arterial	22,200	37,000	44,600	50,000	57,000
4.1A	4	55 mph	Major Road with Raised Median	14,800	24,700	29,600	33,400	37,000
4.1B			Major Road with Intermittent Turn Lanes	13,700	22,800	27,400	30,800	34,200
4.2A	4	40 mph	Boulevard with Raised Median	5,700	12,500	19,000	27,000	32,500
4.2B			Boulevard with Intermittent Turn Lane	5,000	10,900	17,200	25,000	30,000

TABLE 6.7: COUNTY OF SAN DIEGO PROPOSED ROADWAY SEGMENT DAILY CAPACITY AND LEVEL OF SERVICE STANDARDS								
No.	Travel Lanes	Design Speed	Road Classification	Level of Service (in ADT)				
				A	B	C	D	E
2.1A	2	45 mph	Community Collector with Raised Median	2,800	6,500	10,300	15,000	20,500
2.1B			Community Collector w/ Continuous Turn Lane	3,000	6,000	9,500	13,500	19,000
2.1C			Community Collector w/ Intermittent Turn Lane	3,000	6,000	9,500	13,500	19,000
2.1D			Community Collector with Improvement Options	3,000	6,000	9,500	13,500-15,000	19,000
2.1E			Community Collector	1,900	4,100	7,100	10,900	16,200
2.2A	2	40 mph	Light Collector with Raised Median	3,000	6,000	9,500	13,500	19,000
2.2B			Light Collector with Continuous Turn Lane	3,000	6,000	9,500	13,500	19,000
2.2C			Light Collector with Intermittent Turn Lanes	3,000	6,000	9,500	13,500	19,000
2.2D			Light Collector with Improvement Options	3,000	6,000	9,500	13,500	19,000
2.2E			Light Collector	1,900	4,100	7,100	10,900	16,200
2.2F			Light Collector with Reduced Shoulder	1,550	3,300	5,600	8,700	16,200
2.3A	2	35 mph	Minor Collector with Raised Median	1,400	3,000	5,100	8,000	12,900
2.3B			Minor Collector with Intermittent Turn Lane	1,400	3,000	5,100	8,000	12,900
2.3C			Minor Collector	1,350	2,700	4,500	7,000	11,300
Source: County of San Diego								
Notes:								
<ul style="list-style-type: none">The LOS thresholds for Mobility Element road classifications reflect those in place when EIR traffic modeling was conducted. Some LOS thresholds are subject to change with the revision to the County Public Road Standards (The Standards). However, the 2009 revisions to The Standards will not change the LOS D operation threshold of any road classification. The standard of LOS D for Mobility Element roads and the LOS D operation thresholds were adopted by the Board of Supervisors.Bold numbers indicate the ADT thresholds for acceptable LOS.								

Impact Significance Criteria

The Thresholds for determination of significant project-related impacts to roadways in the City of San Diego, City of Chula Vista, and County of San Diego are outlined below:

City of San Diego

The City of San Diego considers LOS D to be the maximum acceptable LOS for roadways, except in undeveloped locations where LOS C is considered to be acceptable. In general, a significant impact would be identified when the addition of project traffic results in a Level of Service dropping from LOS D or better to substandard LOS E or F. **Table 6.8** summarizes the impact significance thresholds for facilities operating at substandard LOS with and without the project. As shown, the thresholds as applied to roadway segments are based upon an acceptable increase in the Volume / Capacity (V/C) ratio.

TABLE 6.8: CITY OF SAN DIEGO MEASURES OF SIGNIFICANT PROJECT TRAFFIC IMPACTS						
LOS with Project	Allowable Change Due to Impact					
	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec)	Delay (min.)
E	0.01	1	0.02	1	2	2
F	0.005	0.5	0.01	0.5	1	1
Source: City of San Diego						

City of Chula Vista

The City of Chula Vista considers LOS C in non-Urban Core areas and LOS D in Urban Core areas to be the acceptable standards for Circulation Element roadway segments. Significant impacts are those impacts for which the addition of project trips results in an identifiable degradation in LOS on roadway segments triggering the need for improvement strategies.

Criteria for determining whether a project results in significant impacts on non-Urban Core roadway segments are as follows:

1. LOS is LOS D, LOS E, or LOS F.
2. Project trips comprise 5% or more of total segment volume.
3. Project adds greater than 800 ADT to the segment.

Criteria for determining whether a project results in significant impacts on Urban Core roadway segments are as follows:

1. LOS is LOS E or LOS F.
2. Project trips comprise 5% or more of total segment volume.

County of San Diego

Traffic volume increases from public or private dependent projects that result in one or more of the following criteria will have a significant traffic impact on a road segment, unless specific facts show that there are other circumstances that mitigate or avoid such impacts:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F as identified in **Table 6.9**, or will cause a Circulation Element Road or State Highway to operate at LOS E or LOS F as a result of the proposed project, or

- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.

TABLE 6.9: MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON ROAD SEGMENTS: ALLOWABLE INCREASES ON CONGESTED ROAD SEGMENTS			
Level of Service	Two-Lane Road	Four-Lane Road	Six-Lane Road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT
Source: County of San Diego Notes: <ul style="list-style-type: none"> • By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts. • The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable Level of Service, when such traffic uses a significant amount of remaining road capacity. 			

Existing Conditions

This section describes the key roadway segments analyzed in the adjacent jurisdictions and provides an assessment of roadway performance in terms of operating LOS under Existing Conditions. Analysis results are summarized by jurisdiction.

Roadway Network and Volumes

The existing roadway cross-sections are consistent with current roadway lane configurations. The average daily traffic (ADTs) volumes were derived from the SANDAG Series 11 Southbay Base Year 2003 traffic model, specially built for the City of National City General Plan Update.

Roadway Performance

Table 6.10 displays existing roadway cross-sections, daily roadway capacity (LOS E) based upon the respective jurisdictional standard, the existing average daily traffic volume (ADT), and the corresponding LOS for the identified key roadway segments by jurisdiction.

As shown in table, only the segment of Sweetwater Road, from Plaza Bonita Center Way to Willow St (County of San Diego) is currently operating at LOS E.

**TABLE 6.10:
ROADWAY LEVEL OF SERVICE BY JURISDICTION
EXISTING CONDITIONS**

Roadway	Segment	Cross-Section	Capacity (LOS E)	ADT	LOS
San Diego					
Harbor Drive	Wabash Blvd to Division St	4-Ln	40,000	26,300	C
Main Street	Wabash Blvd to Division St	4-Ln	40,000	14,300	A
43 rd Street	Logan Ave to Division St	4-Ln	40,000	16,700	B
47 th Street	Logan Ave to I-805	3-Ln	15,000	11,300	D
Euclid Avenue	Logan Ave to Cervantes Ave	4-Ln	30,000	15,000	C
Paradise Valley Road	Munda Rd to Woodman St	4-Ln	40,000	20,000	B
Chula Vista					
Broadway	SR-54 to E St	4-Ln Urban Core	33,750	18,200	D or better
4 th Avenue	SR-54 to E St	4-Ln Urban Core	37,800	19,400	D or better
Plaza Bonita Road	Bonita Mesa Rd to Bonita Rd	4-Ln	37,500	11,100	A
County of San Diego					
Sweetwater Road	Plaza Bonita Center Way to Willow St	2-Ln	19,000	15,600	E
Source: Fehr & Peers, September 2010 Note: Bold letters indicate substandard LOS.					

Adopted City of National City General Plan

The adopted National City General Plan represents the no-project condition, and includes land uses and roadway network characteristics consistent with the currently adopted National City Circulation Element.

Roadway Network and Volumes

The future year roadway classifications within the adjacent jurisdictions were derived from the circulation elements of the respective jurisdictions. The average daily traffic volumes were derived from the SANDAG Series 11 Southbay Transportation Model, "Adopted National City General Plan" traffic forecast.

Roadway Performance

Table 6.11 displays the future year roadway classifications within the adjacent jurisdictions, the roadway capacity (LOS E) based upon the respective jurisdictional standard, the 2030 forecast average daily traffic volume, and the corresponding LOS assuming buildout of the Adopted National City General Plan.

As shown in table, the following two (2) study segments are projected to operate at substandard LOS under future year buildout of the National City's currently adopted General Plan:

- Broadway, from SR-54 to E Street (Chula Vista Urban Core area); and
- Sweetwater Road, from Plaza Bonita Center Way to Willow Street (County of SD).

**TABLE 6.11:
2030 FORECAST ROADWAY LEVEL OF SERVICE BY JURISDICTION
CITY OF NATIONAL CITY ADOPTED GENERAL PLAN**

Roadway	Segment	Classification	Capacity (LOS E)	ADT	LOS
San Diego					
Harbor Drive	Wabash Blvd to Division St	4-Ln Major	40,000	28,600	C
Main Street	Wabash Blvd to Division St	4-Ln Major	40,000	21,400	C
43 rd Street	Logan Ave to Division St	4-Ln Major	40,000	20,800	B
47 th Street	Logan Ave to I-805	4-Ln Collector	30,000	20,100	D
Euclid Avenue	Logan Ave to Cervantes Ave	4-Ln Collector	30,000	19,500	C
Paradise Valley Road	Munda Rd to Woodman St	4-Ln Major	40,000	22,000	C
Chula Vista					
Broadway	SR-54 to E St	Commercial Blvd	33,750	43,200	F
4 th Avenue	SR-54 to E St	Urban Arterial	37,800	25,600	D or better
Plaza Bonita Road	Bonita Mesa Rd to Bonita Rd	4-Ln Major	37,500	11,700	A
County of San Diego					
Sweetwater Road	Plaza Bonita Center Way to Willow St	2.1D Community Collector	19,000	21,500	F
Source: Fehr & Peers, September 2010 Note: Bold letters indicate substandard LOS.					

Proposed City of National City General Plan

This condition includes land uses and roadway network consistent with the proposed City of National City General Plan.

Roadway Network and Volumes

The future year roadway classifications within the adjacent jurisdictions were derived from the circulation elements of the respective jurisdictions. The average daily traffic volumes were derived from the SANDAG Series 11 Southbay Transportation Model, “Proposed National City General Plan” traffic forecast.

Roadway Performance

Table 6.12 displays the assumed future year roadway classification, the roadway capacity (LOS E) based upon the jurisdictional standard, the 2030 average daily traffic volume, and the corresponding LOS for the analyzed roadway segments in the adjacent jurisdictions, assuming buildout of the proposed National City General Plan.

As shown in table, the following two (2) study segments are projected to operate at substandard LOS under future year buildout of the National City’s proposed General Plan:

- Broadway, from SR-54 to E Street (Chula Vista Urban Core area); and
- Sweetwater Road, from Plaza Bonita Center Way to Willow Street (County of SD).

**TABLE 6.12:
2030 FORECAST ROADWAY LEVEL OF SERVICE BY JURISDICTION
CITY OF NATIONAL CITY PROPOSED GENERAL PLAN UPDATE**

Roadway	Segment	Classification	Capacity (LOS E)	ADT	LOS
San Diego					
Harbor Drive	Wabash Blvd to Division St	4-Ln Major	40,000	30,700	C
Main Street	Wabash Blvd to Division St	4-Ln Major	40,000	22,900	C
43 rd Street	Logan Ave to Division St	4-Ln Major	40,000	19,200	B
47 th Street	Logan Ave to I-805	4-Ln Collector	30,000	20,400	D
Euclid Avenue	Logan Ave to Cervantes Ave	4-Ln Collector	30,000	19,400	C
Paradise Valley Road	Munda Rd to Woodman St	4-Ln Major	40,000	21,600	C
Chula Vista					
Broadway	SR-54 to E St	Commercial Blvd	33,750	43,400	F
4 th Avenue	SR-54 to E St	Urban Arterial	37,800	25,800	D or better
Plaza Bonita Road	Bonita Mesa Rd to Bonita Rd	4-Ln Major	37,500	11,700	A
County of San Diego					
Sweetwater Road	Plaza Bonita Center Way to Willow St	2.1D Community Collector	19,000	21,300	F
Source: Fehr & Peers, September 2010					
Note: Bold letters indicate substandard LOS.					

Identification of Significant Impacts

This section documents significant impacts on the key roadway segments within the adjacent jurisdictions that would result from buildout of the proposed National City General Plan Update. The following comparisons were made for purposes of determining significant traffic impacts:

Proposed National City General Plan to Existing Conditions (Proposed Plan to Ground) – this comparison provides the basis for identifying significant impacts associated with future year buildout of the proposed General Plan when comparing to the current roadway operations.

Proposed National City General Plan to Adopted National City General Plan (Proposed Plan to Adopted Plan) – this comparison provides the basis for identifying new significant impacts that would result with the proposed General Plan.

Comparison of Proposed National City General Plan to Existing Conditions

Table 6.13 compares the resulting roadway performance on the key roadway segments within the adjacent jurisdictions under the proposed City of National City General Plan to Existing conditions, and displays the changes in the roadway segments Volume/Capacity (V/C) ratio as the basis for identification of significant impacts.

**TABLE 6.13:
SIGNIFICANT TRAFFIC IMPACTS
PROPOSED NATIONAL CITY GENERAL PLAN VS. EXISTING CONDITIONS
(PROPOSED PLAN TO GROUND)**

Roadway	Segment	Existing			Proposed GP Update			Δ in V/C	Significant Impact?
		ADT	V/C	LOS	ADT	V/C	LOS		
San Diego									
Harbor Drive	Wabash Blvd to Division St	26,300	0.66	C	30,700	0.77	C	0.11	No
Main Street	Wabash Blvd to Division St	14,300	0.36	A	22,900	0.57	C	0.21	No
43 rd Street	Logan Ave to Division St	16,700	0.42	B	19,200	0.48	B	0.06	No
47 th Street	Logan Ave to I-805	11,300	0.75	D	20,400	0.68	D	-0.07	No
Euclid Avenue	Logan Ave to Cervantes Ave	15,000	0.50	C	19,400	0.65	C	0.15	No
Paradise Valley Road	Munda Rd to Woodman St	20,000	0.50	B	21,600	0.54	C	0.04	No
Chula Vista									
Broadway	SR-54 to E St	18,200	0.54	D or better	43,400	1.29	F	0.75	Yes
4 th Avenue	SR-54 to E St	19,400	0.51	D or better	25,800	0.68	D or better	0.17	No
Plaza Bonita Road	Bonita Mesa Rd to Bonita Rd	11,100	0.30	A	11,700	0.31	A	0.01	No
County of San Diego									
Sweetwater Road	Plaza Bonita Center Way to Willow St	15,600	0.82	E	21,300	1.12	F	0.30	Yes
Source: Fehr & Peers, September 2010									
Notes:									
<ul style="list-style-type: none">Bold letters indicate substandard LOS.Δ in V/C = The change in the volume to capacity ratio between the two scenarios.									

As shown, the following two (2) roadway segments in the adjacent jurisdictions (one in the City of Chula Vista and one in the County of San Diego) would be significantly impacted based upon a comparison of the proposed National City General Plan to Existing conditions:

City of Chula Vista: Broadway, from SR-54 to E Street.

County of San Diego: Sweetwater Road, from Plaza Bonita Center Way to Willow Street.

Comparison of Proposed National City General Plan to Adopted National City General Plan

Table 6.14 compares projected roadway performance on the key roadway segments within the adjacent jurisdictions under the proposed National City General Plan to the roadway performance under the Adopted National City General Plan, and displays the change in Volume/Capacity (V/C) ratio as the basis for identification of significant impacts.

TABLE 6.14: SIGNIFICANT TRAFFIC IMPACTS PROPOSED NATIONAL CITY GENERAL PLAN VS. ADOPTED NATIONAL CITY GENERAL PLAN (PROPOSED PLAN TO ADOPTED PLAN)									
Roadway	Segment	Existing			Proposed GP Update			Δ in V/C	Significant Impact?
		ADT	V/C	LOS	ADT	V/C	LOS		
San Diego									
Harbor Drive	Wabash Blvd to Division St	28,600	0.72	C	30,700	0.77	C	0.05	No
Main Street	Wabash Blvd to Division St	21,400	0.54	C	22,900	0.57	C	0.03	No
43 rd Street	Logan Ave to Division St	20,800	0.52	B	19,200	0.48	B	-0.04	No
47 th Street	Logan Ave to I-805	20,100	0.67	D	20,400	0.68	D	0.01	No
Euclid Avenue	Logan Ave to Cervantes Ave	19,500	0.65	C	19,400	0.65	C	0	No
Paradise Valley Road	Munda Rd to Woodman St	22,000	0.55	C	21,600	0.54	C	-0.01	No
Chula Vista									
Broadway	SR-54 to E St	43,200	1.28	F	43,400	1.29	F	0.01	No
4 th Avenue	SR-54 to E St	25,600	0.68	D or better	25,800	0.68	D or better	0	No
Plaza Bonita Road	Bonita Mesa Rd to Bonita Rd	11,700	0.31	A	11,700	0.31	A	0	No
County of San Diego									
Sweetwater Road	Plaza Bonita Center Way to Willow St	21,500	1.13	F	21,300	1.12	F	-0.01	No
Source: Fehr & Peers, September 2010									
Notes:									
<ul style="list-style-type: none">• Bold letters indicate substandard LOS.• Δ in V/C = The change in the volume to capacity ratio between the two scenarios.									

As shown, none of the study roadway segments within the adjacent jurisdictions would be significantly impacted based upon the comparison of the National City's proposed General Plan to the currently Adopted General Plan.

Mitigation of Significant Impacts

Proposed Plan to Ground – Mitigation of the identified significant traffic impacts could include a variety of options from roadway segment widenings to specific intersection improvements. Requirements could vary by jurisdiction, including further review of intersection operations as a determination of overall roadway segment performance. The feasibility of modifying the roadway classifications as shown in the circulation elements of the individual incorporated jurisdictions would be a consideration as well.

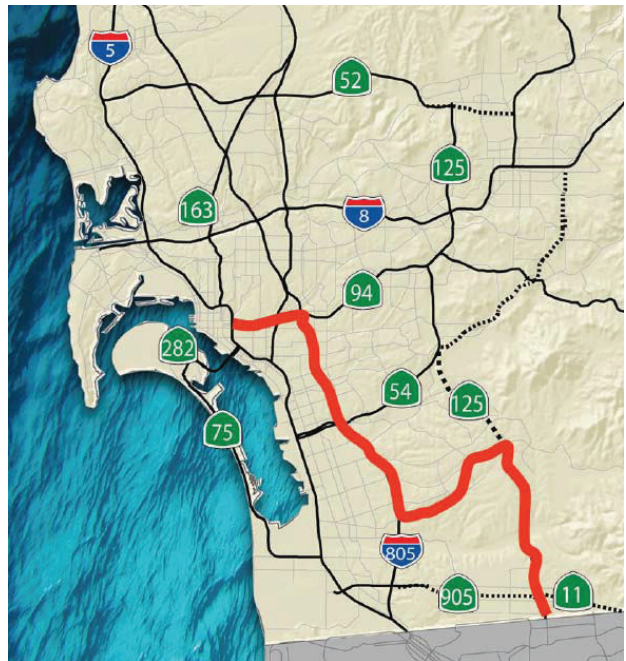
Proposed Plan to Adopted Plan – No significant impacts were identified, therefore no mitigation measures would be required.

6.4 TRANSIT SERVICES AND FACILITIES

Increasing the use of public transit is a primary goal for the City of National City. Planned service improvements include the future Bus Rapid Transit (BRT) line along I-805, enhanced transit services along Plaza Boulevard linking the trolley station with the planned BRT line, and potential shuttle routes servicing the local community.

6.4.1 Future South Bay Bus Rapid Transit (BRT)

The South Bay BRT project is a SANDAG initiated project with two phases of implementation. Phase 1 includes a 21-mile fast and high-frequency transit line between the Otay Mesa border crossing and downtown San Diego via eastern Chula Vista, I-805, and SR-94; and Phase 2 includes the addition of the I-805 managed lanes, a direct access ramp and transit station at Palomar Street, and two new on-line stations and park-and-rides at H Street and Plaza Boulevard. The BRT project is expected to be in service by early 2014. At full build out, service along this BRT line would be provided at 10-minute frequencies during peak commute hours, and every 15 minutes during the mid-day.



The Plaza Boulevard Station is located in the City of National City. Along with upgraded passenger shelter, this station will be designed with technological enhancements that will provide real-time bus arrival information and ticket vending machines. The station will be located in the public right-of-way and designed to provide safe pedestrian access.

6.4.2 Plaza Boulevard

Plaza Boulevard, already a busy transit corridor, will become the most important transit connection between the 8th Street Trolley Station and the planned BRT station located at off of Plaza Boulevard in National City. Plaza Boulevard, between Highland Avenue and Euclid Avenue is planned to be widened to a 6-lane Arterial with projected average traffic volumes range from 19,200 and 37,800. Two levels of

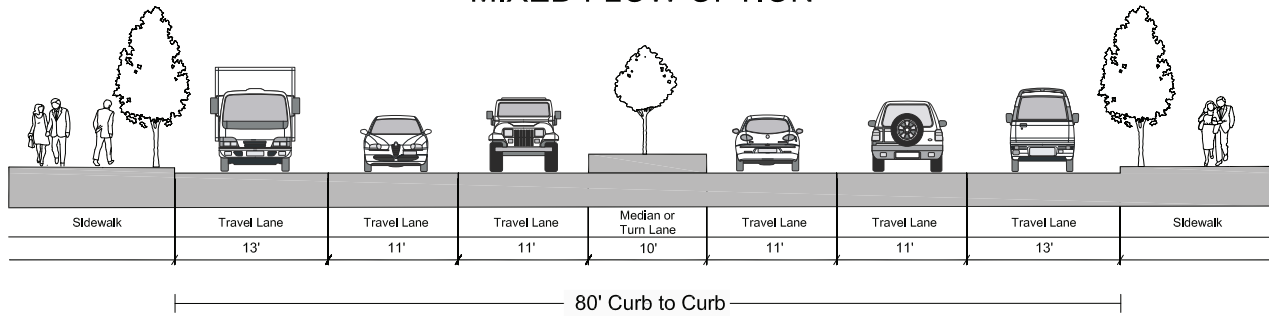
transit treatments are under consideration for this section of the roadway, including 1) mixed flow (current conditions) with transit signal priority; and 2) implementation of a transit-only lane with transit signal priority. With transit only lane option, the most outer lane in each direction would be designated for transit and right-turn vehicles. **Table 6-15** displays future year traffic operations along Plaza Boulevard with the two transit options. **Figure 6-8** illustrates the proposed cross-sections for Plaza Boulevard with the mixed flow and transit only lane options.

Intersection LOS analyses were conducted along Plaza Boulevard to evaluate the effects on traffic operations associated with both the transit treatment scenarios identified above. Detailed LOS calculation worksheets are attached in **Appendix C**.

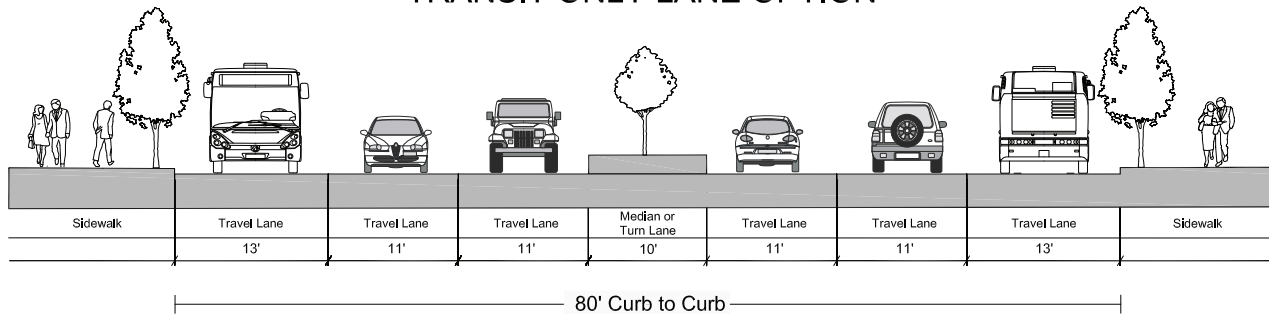
TABLE 6.15: PLAZA BOULEVARD TRAFFIC OPERATIONS WITH TRANSIT OPTIONS				
Intersection	2030 with Mixed Flow Transit		2030 with Transit-Only Lane	
	AM Peak	PM Peak	AM Peak	PM Peak
Plaza Blvd / Highland Ave	24.0 (C)	45.8 (D)	24.1 (C)	47.4 (D)
Plaza Blvd / L Ave	11.6 (B)	17.2 (B)	11.6 (B)	18.4 (B)
Plaza Blvd / N Ave	11.3 (B)	22.4 (C)	11.2 (B)	25.5 (C)
Plaza Blvd / Palm Ave	27.8 (C)	32.0 (C)	28.6 (C)	36.0 (D)
Plaza Blvd / I-805 SB Ramps	16.0 (B)	32.7 (C)	16.6 (B)	33.5 (C)
Plaza Blvd / I-805 NB Ramps	10.5 (B)	18.4 (C)	11.1 (B)	18.6 (B)
Plaza Blvd / Grove St	19.4 (B)	41.8 (D)	26.3 (C)	46.7 (D)
Plaza Blvd / Euclid Ave	34.3 (C)	49.1 (D)	30.8 (C)	39.2 (D)
Source: Fehr & Peers, September 2010				

As shown in the table, all of the intersections along Plaza Boulevard would operate at acceptable LOS D or better during peak hours in the year 2030, both with “six travel lanes with mixed flow for transit” and “four travel lanes with transit only lanes” options. Along with transit signal priority treatment, the “transit only lanes” option would allow transit to operate in its own right-of-way, ensure on-time arrival and shorter travel times thus improving the overall quality of transit service along Plaza Boulevard. Thus, the likelihood of increased ridership and a corresponding decrease in auto trip would be under this option.

MIXED FLOW OPTION



TRANSIT ONLY LANE OPTION



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PLAZA BOULEVARD PROPOSED CROSS-SECTIONS

6.4.3 Potential Shuttle Routes

This section presents an initial evaluation of three proposed shuttle routes in National City. The evaluation includes a summary of service objectives; description of the routes, service characteristics, and potential vehicle types; identification of conceptual operation and capital costs; and recommended next steps to further this planning process.

Service Objectives

The three routes would provide local mobility and regional access to National City residents, workers, and visitors. Frequent loop service within the Civic Center/downtown area would be a convenient alternative to driving, thus improving local mobility. The hub of each route would be at a MTS Blue Line Station, with Shuttle Route 1 also connecting to the planned South Bay BRT station at I-5/Plaza Boulevard. This type of shuttle service can help meet important multi-modal objectives:

- Improving local access to regional transit facilities;
- Providing a convenient and accessible local transportation for local residents;
- Providing employees and residents of the City with a green lifestyle choice for transportation;

Route Descriptions

Three potential shuttle routes were provided for evaluation by National City Staff.

Route 1

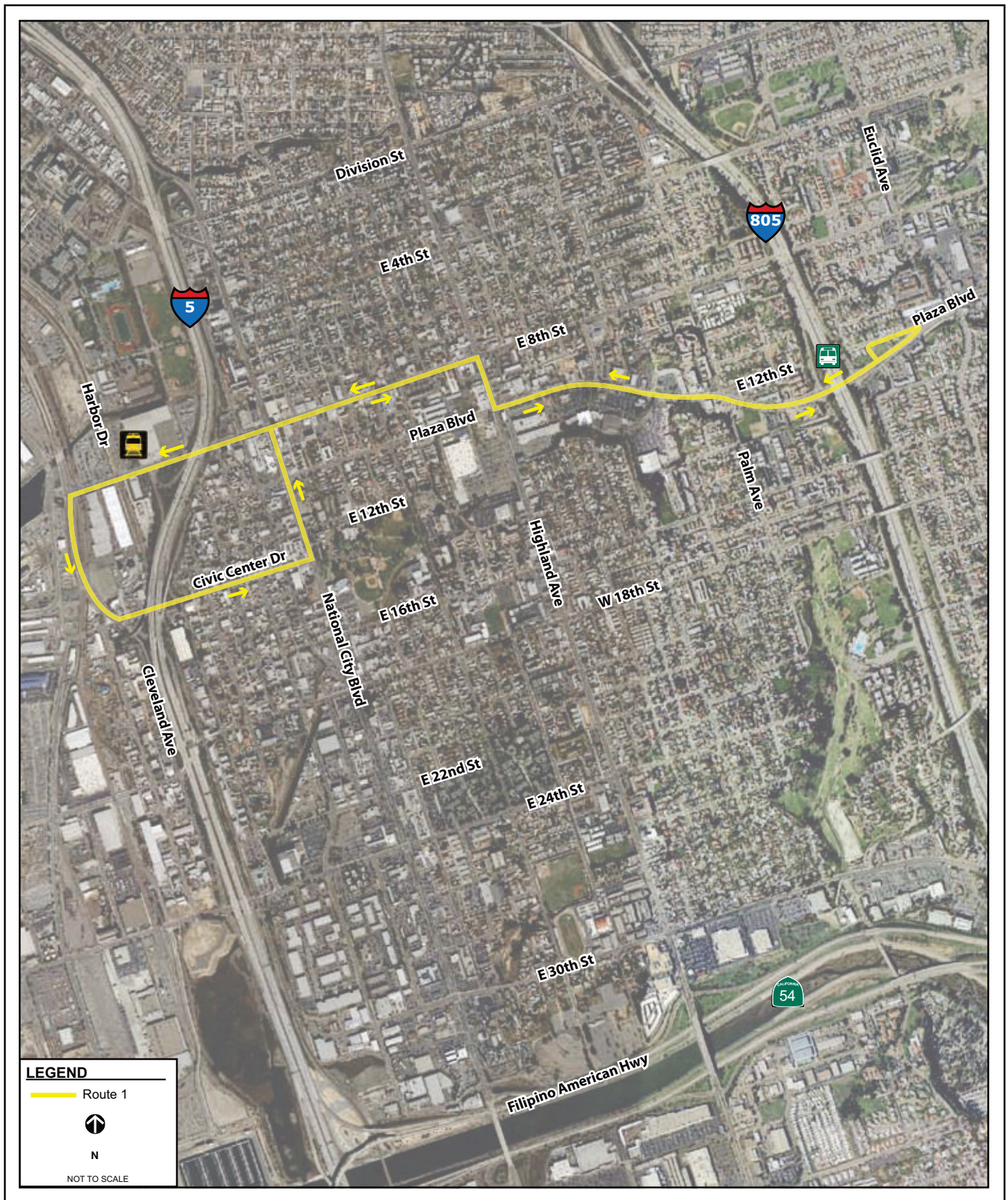
Route 1 would provide east-west service in National City and offer access to, and a connection between regionally significant transit facilities (the 8th Street Trolley Station and the proposed South Bay Bus Rapid Transit (BRT) station at I-5/Plaza Boulevard). The route would travel primarily on 8th Street and Plaza Boulevard. A route concept map is shown in **Figure 6-9**. This route would also provide access to Plaza Towne Shopping Center, South Bay Plaza Shopping Center, and retail destinations along 8th Street. Round trip distance is 5.0 miles.

Route 2

Route 2 would provide a convenient connection between the Civic Center/downtown area and the 8th Street Trolley Station. In the Civic Center/downtown area, the route would travel on National City Boulevard, 8th Street, D Avenue, 16th Street in a clockwise direction. A route concept map is shown in **Figure 6-10**. This route would provide access to Kimball Park, National City Library, City Hall, and retail destinations along 8th Street. Round trip distance is 3.2 miles.

Route 3

Route 3 would provide a connection between the Civic Center/downtown area and the 24th Street Trolley Station. The route would mirror Route 2 in the Civic Center/downtown area. A route concept map is shown in **Figure 6-11**. This route would provide access to Kimball Park, National City Library, City Hall, and retail destinations along 8th & 18th Streets. Round trip distance is 3.0 miles.

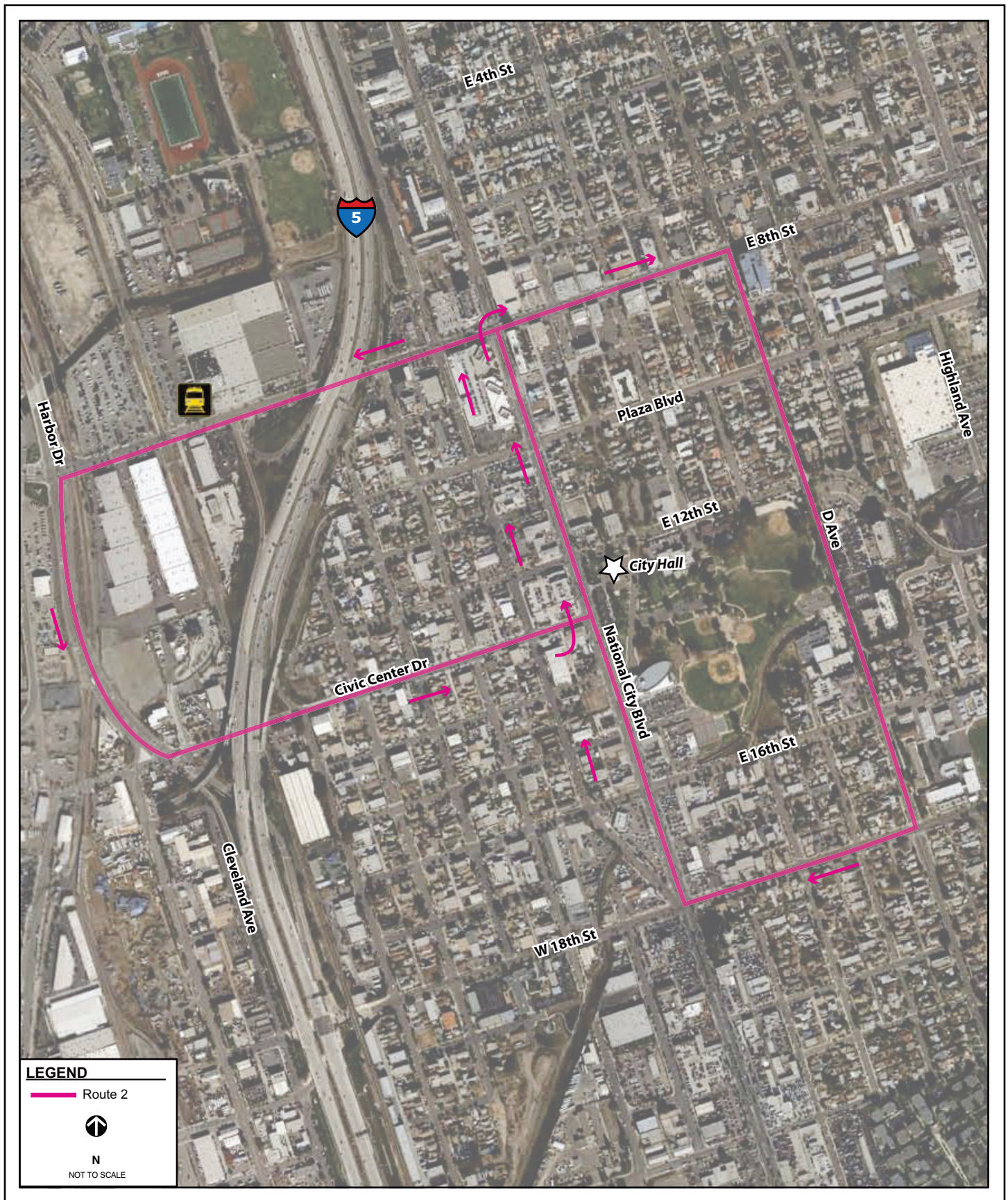


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NATIONAL CITY SHUTTLE ROUTE 1

FIGURE 6-9

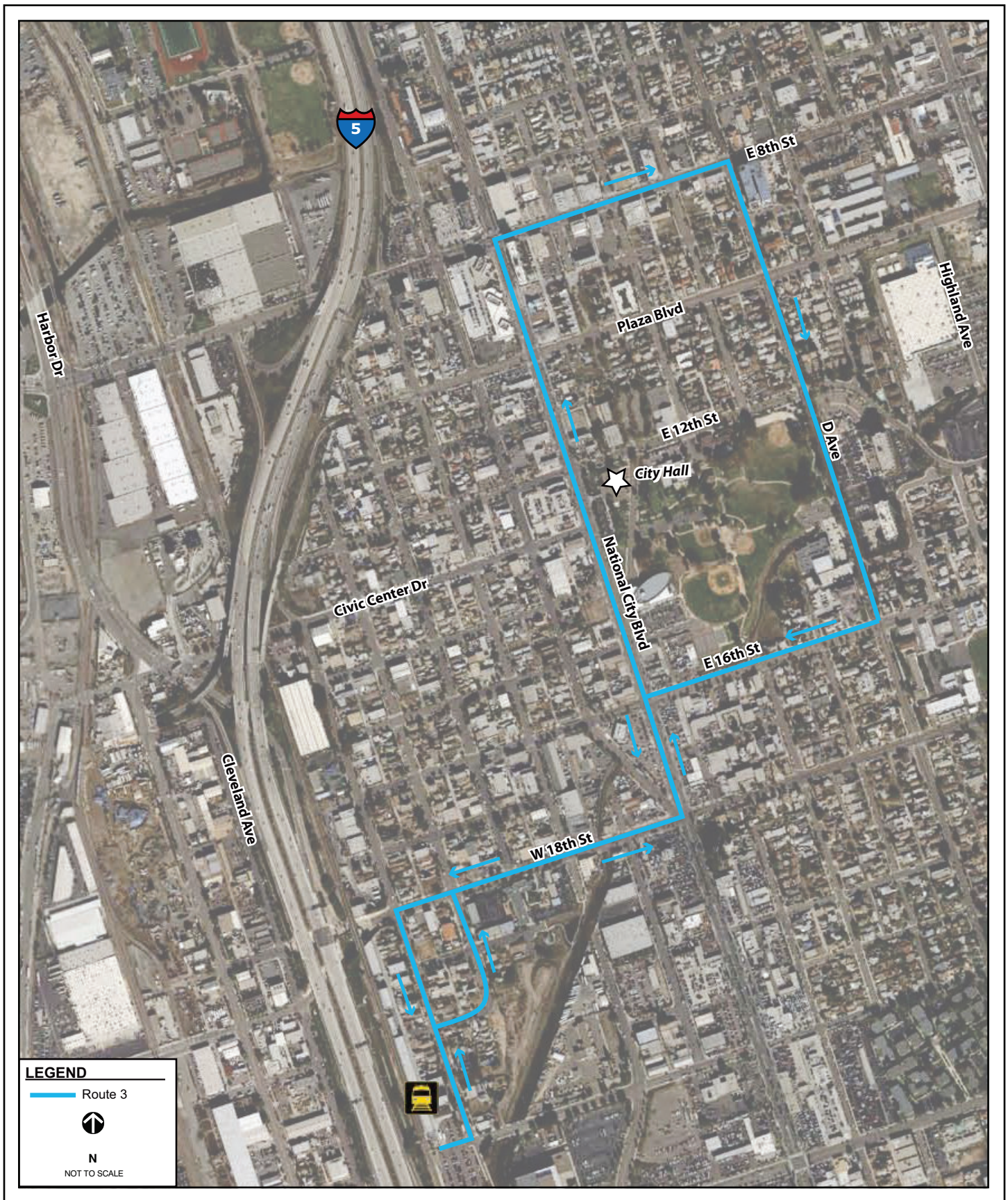


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NATIONAL CITY SHUTTLE ROUTE 2

FIGURE 6-10



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OC09-0145\Graphics\A\Figure 6-11 National City Shuttle Rt 3

NATIONAL CITY SHUTTLE ROUTE 3

FIGURE 6-11

Service Characteristics

For this preliminary evaluation, all routes would share the same service characteristics, which are summarized in **Table 6.16**.

TABLE 6.16: PROPOSED SHUTTLE ROUTE SERVICE CHARACTERISTICS		
	<i>Service Span</i>	<i>Frequency</i>
Peak	7-10 AM, 4-7 PM	15 Min
Off-Peak	10 AM – 4 PM	30 Min
Weekend	9 AM – 6 PM	30 Min

The service frequency of the routes should be coordinated with the trolley and BRT schedules so as to provide efficient transfers and minimized wait times.

Vehicle Types

A variety of options are available, from cutaway buses to traditional 40' transit buses. Regular cutaway buses range from approximately \$150,000-\$225,000 depending on length, interior configuration, and fuel technology. They typically offer 18-34 seats and are up to 36 feet in length. Transit buses are a more expensive option, but can hold more passengers than cutaway buses, including standing passengers. For example, a compressed natural gas version (CNG) version of the 30 seated passenger 30 ft El Dorado E-Z Rider II transit bus costs approximately \$350,000. A 40 seated passenger 40 ft low floor North American Bus Industries (NABI) transit bus costs approximately \$500,000. For this preliminary evaluation, capital costs are assumed for a regular cutaway bus (\$150,000 each).



Cutaway Bus



30' Transit Bus

Capital and Operation Cost Estimates

Operation Costs

A conceptual transit routing plan was prepared to estimate operating costs for each route. The transit routing plan assumed the routes shown in Figures 6-9 through 6-11 and the service characteristics detailed above. Assuming an average speed of 12 mph for shuttle operations and a cost per revenue

service hour of \$72, the inputs from the routing plan were used to estimate the revenue hours, daily cost, and an annual cost for the three routes. Annual operating cost for year-round service would be approximately \$400,000 per route. Each route would need to operate two buses during peak service (15 minute headways) and one bus during off-peak/weekend service; therefore the conceptual cost to operate a given route would be generally equivalent for all routes. The cost to operate one of the proposed shuttle routes is displayed by weekday and weekend service in **Table 6.17**.

TABLE 6.17: ESTIMATED ANNUAL COST FOR OPERATING A PROPOSED SHUTTLE ROUTE			
	Daily Revenue Hours	Daily Cost	Annual Cost
Weekday	18	\$1,300	\$330,000
Weekend/Holiday	9	\$650	\$70,000

Capital Costs

The primary capital cost is the shuttles themselves. For the service assumed in this evaluation, a total of seven (7) buses would be needed (six in operation and one spare) for an estimated cost of approximately \$1 million. Capital costs can also include non purchase-related vehicle expenses such as repair (engine rebuilds, damage), registration, insurance, and backup rental and other tangible goods related to the operation of the shuttles such as uniforms, keys, locks, radios, and miscellaneous supplies. Federal Transit Administration (FTA) Section 5307 and 5309 Bus funds can be used for the purchase of new vehicles as well as for the capital-related operating costs as described above.

Next Steps

Prior to actual implementation, additional study would be required to refine routing, stop locations, and service characteristics, forecast ridership, and develop an operations and implementation plan for each of the proposed shuttle routes. Other key issues that need to be addressed:

- Schedule coordination with other local and regional services including timed transfers at Trolley and BRT stations. Coordination activities should also address interface with other local bus routes to ensure efficiencies and minimize duplications. For example Route 1 provides similar services as portions of MTS Routes 962/963 along Plaza Boulevard.
- Provision of improved bus infrastructure and priority treatments to improve operations and schedule adherence. Examples in queue jumpers at key locations and possible bus turnaround at the 8th Street Trolley Station. The 8th Street Trolley station only has a westbound stop for buses. The current configuration requires westbound traveling buses to begin eastbound service by making a left on Harbor Boulevard, left on Civic Center Drive, and then left on National City Boulevard.

6.5 GOODS MOVEMENT FACILITIES

The majority of the goods movement within the City of National City will continue to revolve around the 168 acre National City Marine Terminal. Future transportation issues for the marine terminal are primarily related to improving and enhancing freeway access, while minimizing the impact of the truck activity on other roadways within the City of National City.

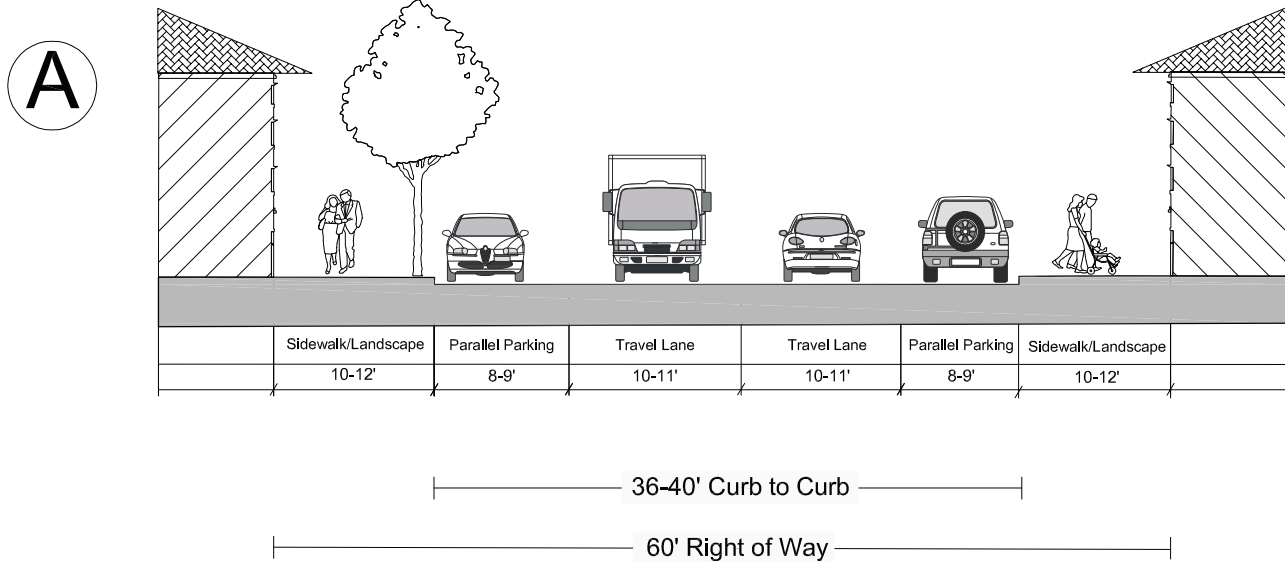
Two I-5 freeway interchanges, at Bay Marina Drive and Civic Center Drive/harbor Drive are located near the Marine Terminal. Neither of these interchanges has the geometry or traffic capacity to route trucks

efficiently to the freeway system. In addition, the increase in commercial redevelopment activity along Bay Marina Drive has raised concerns about high volumes of truck activity on the adjacent streets.

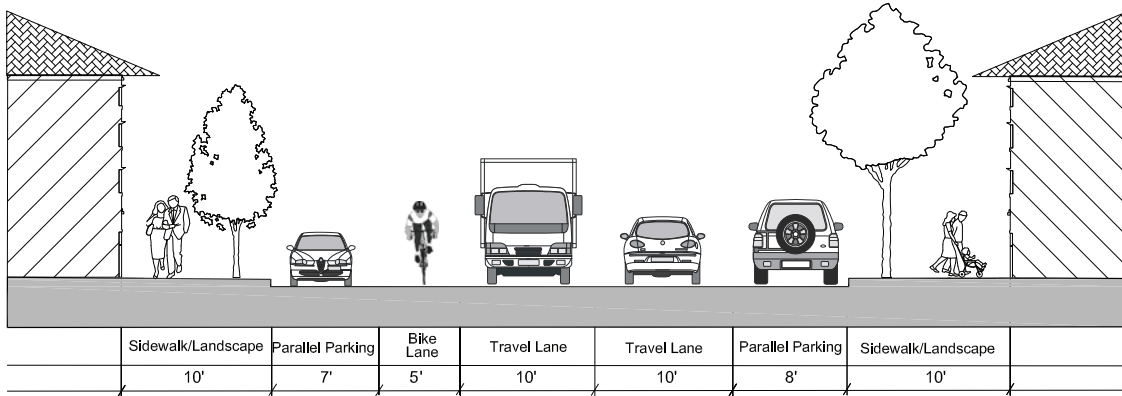
Previous studies have shown that Bay Marina Drive and its intersections can physically accommodate the existing and forecast truck volumes. The nature of the truck business at the Marine Terminal and the adjacent industrial areas is such that the peak hour percentages are much less than those of a commuter-oriented land use. Even though Bay Marina Drive can handle the truck volumes, it is generally not desirable to have a high truck presence adjacent to the types of retail land uses planned for this area.

As part of the South I-5 Freeway/Harbor Drive Project Study Report (2007), Caltrans examined a number of freeway and surface roadway improvements within the vicinity of the National City Marine Terminal. Options reviewed included improvement of both the I-5 interchanges at Bay Marina Drive and Civic Center Drive, intersection striping and channelization improvements, and potential realignment of the connections between Harbor Drive, Tidelands, and Civic Center Drive. In addition the Port of San Diego and SANDAG have successfully pursued Trade Corridor Improvement Funds (TCIF) for key freeway enhancement projects. The City should continue to coordinate with Caltrans, SANDAG, and the Port to promote improvements in this area.

APPENDIX A: PROPOSED COMMUNITY CORRIDORS STREET CROSS-SECTIONS



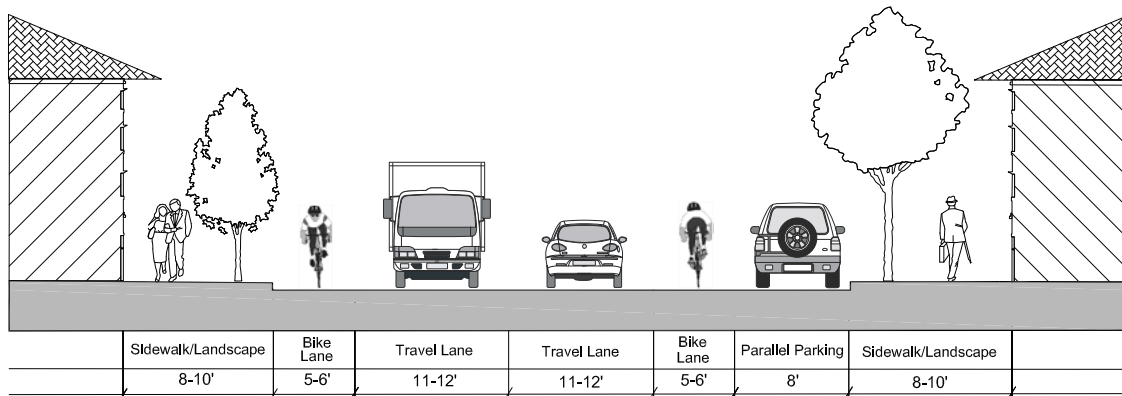
A



40' Curb to Curb

60' Right of Way

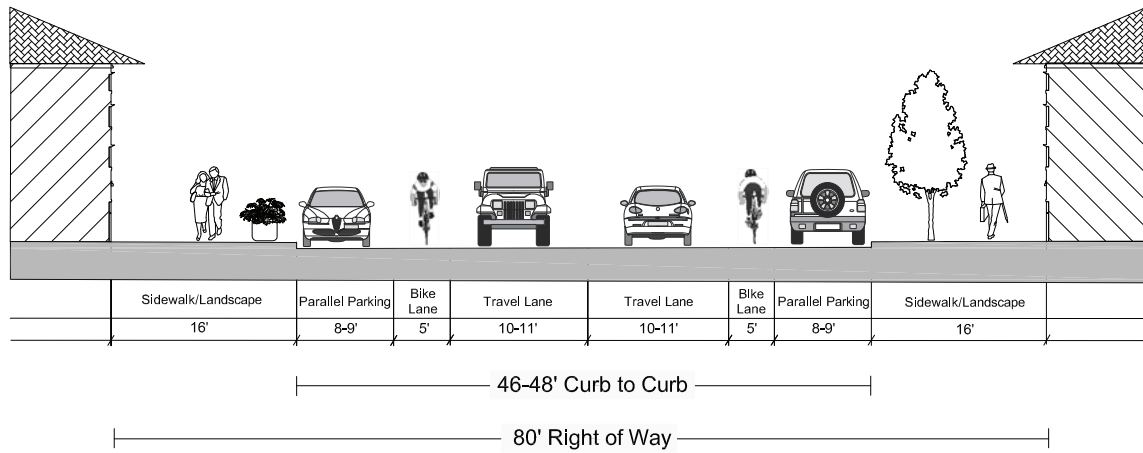
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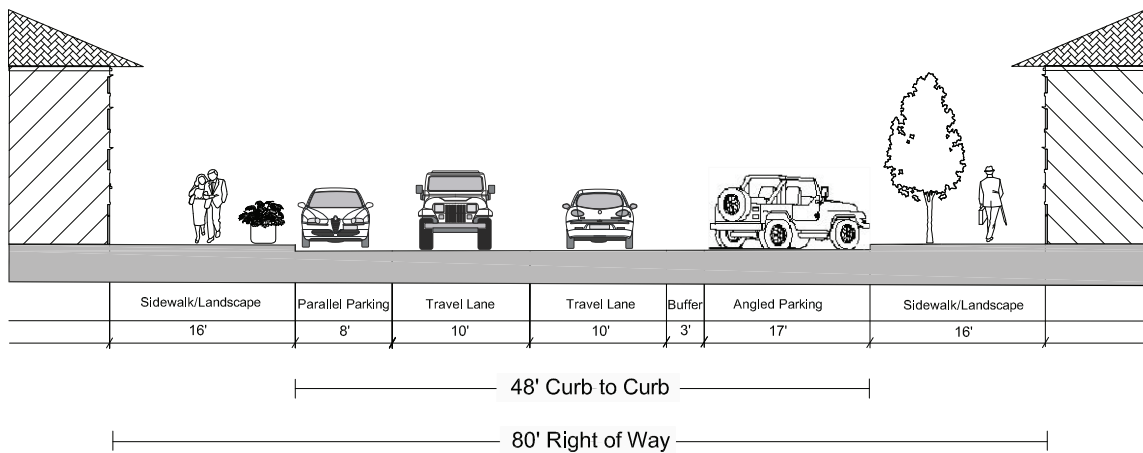
40-44' Curb to Curb

60' Right of Way

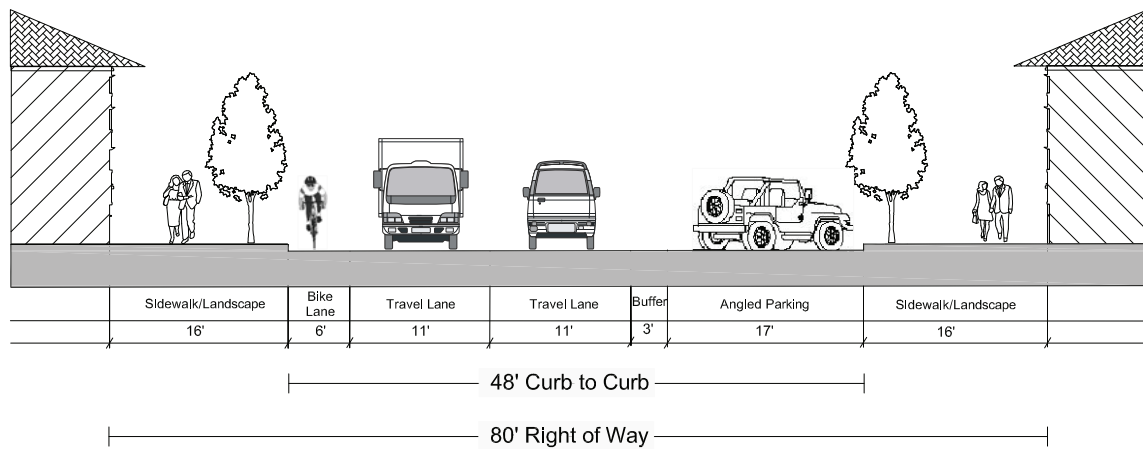
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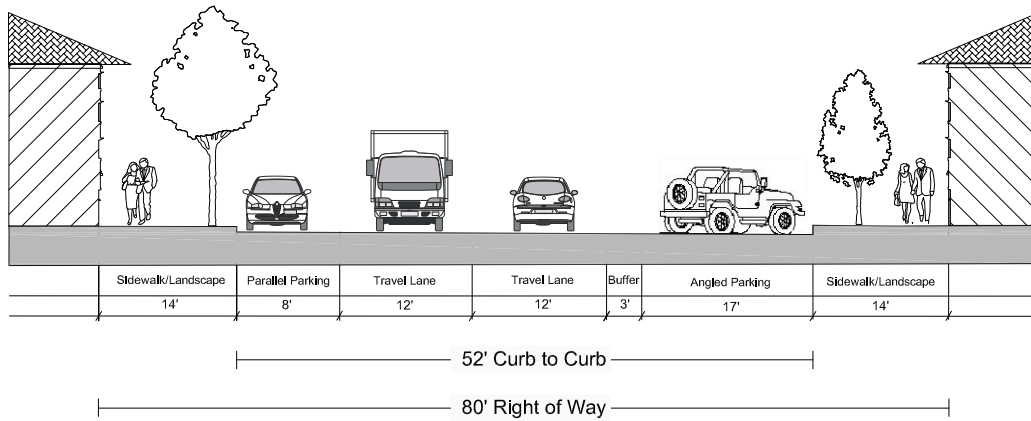
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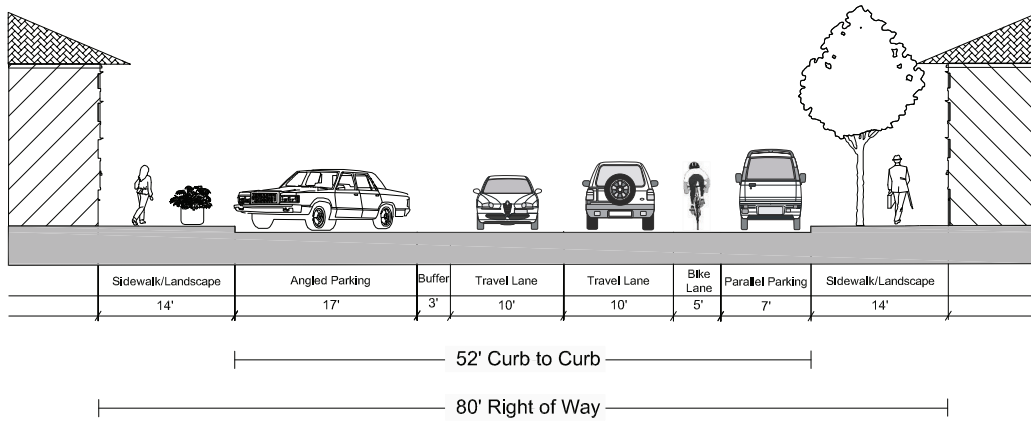
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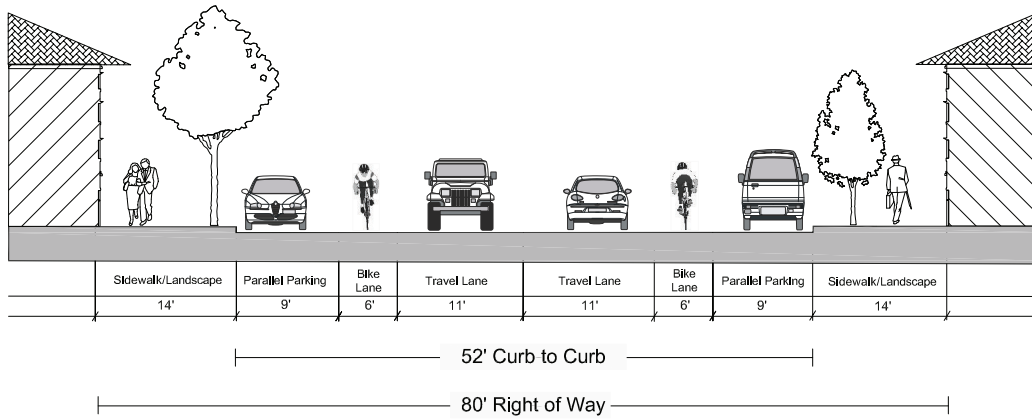
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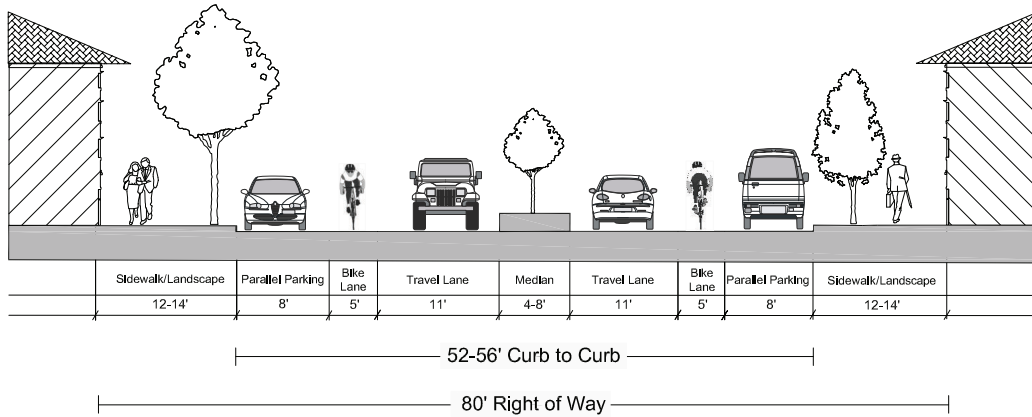
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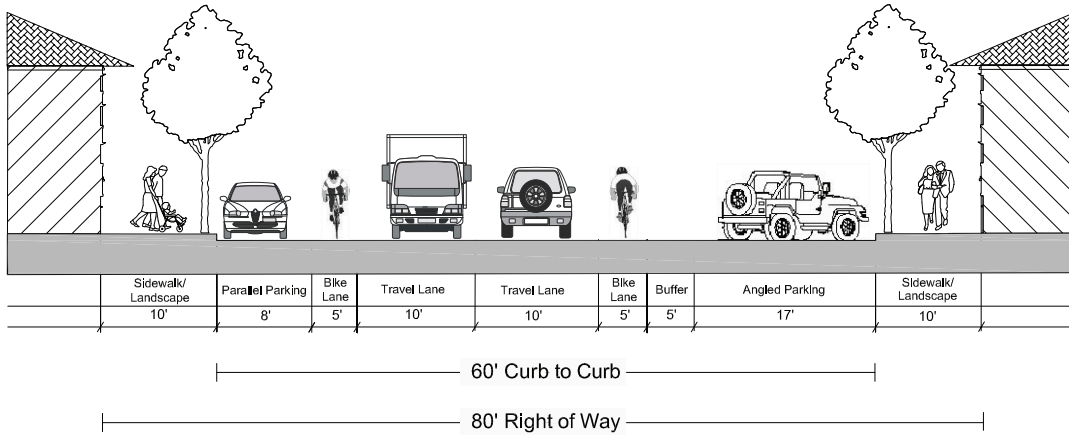
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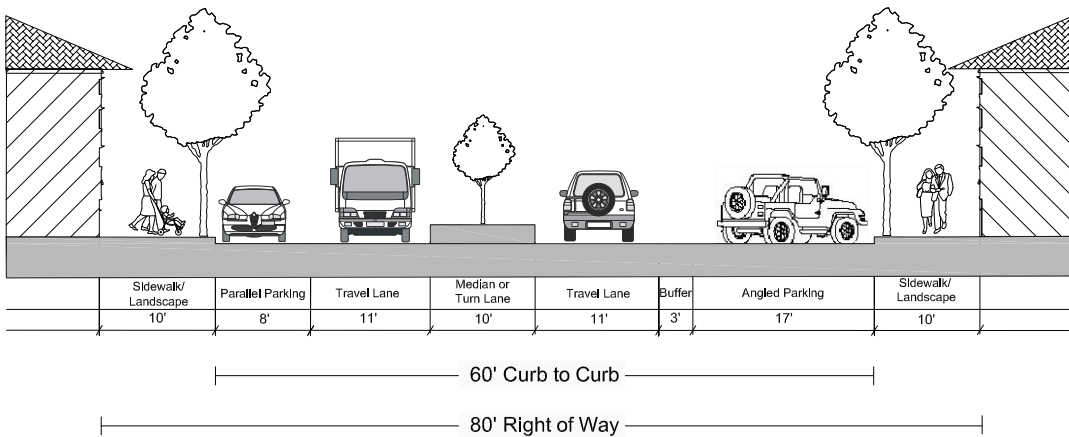
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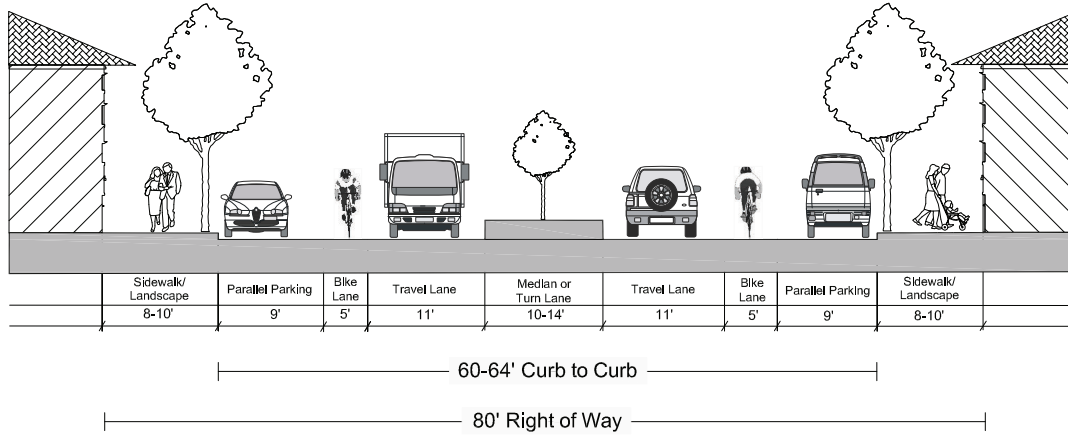
A



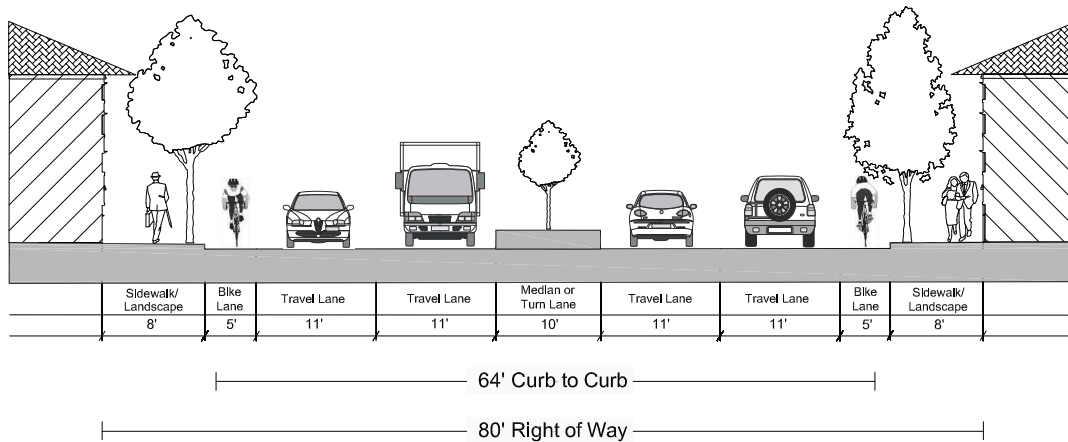
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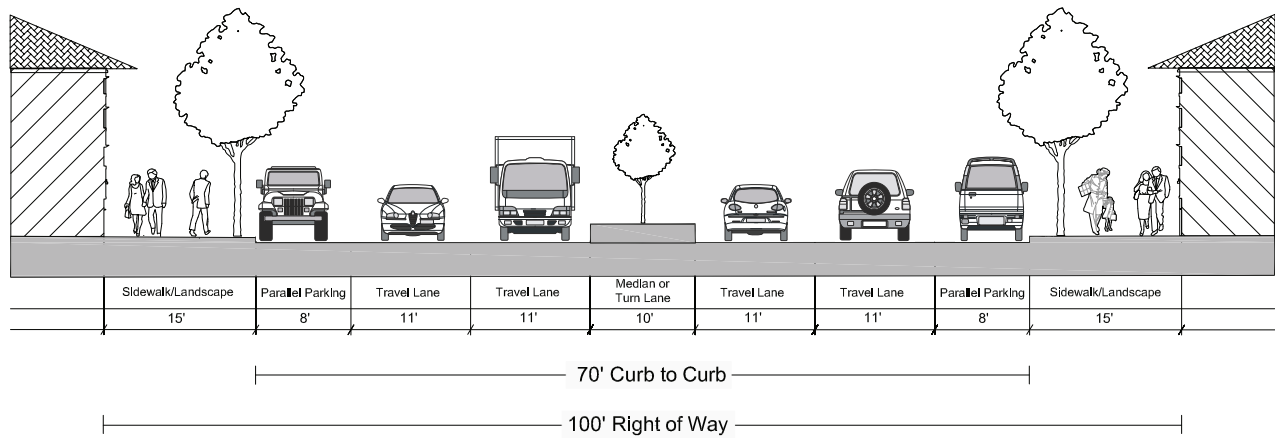
C



D



A



FEHR & PEERS
TRANSPORTATION CONSULTANTS

NATIONAL CITY PROPOSED COMMUNITY CORRIDORS STREET CROSS-SECTIONS (70')

**APPENDIX B:
INTERSECTION LOS ANALYSIS FOR
PLAZA BOULEVARD WITH TRANSIT OPTIONS**

HCM Signalized Intersection Capacity Analysis

2030_Opt_AM_6 Lanes

1: Plaza Blvd. & Highland Ave.

9/9/2010





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	113	23	72	284	110	49	517	58	37	349	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	4957		1770	3539	1583	1770	3539	1583	1770	3483	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	4957		1770	3539	1583	1770	3539	1583	1770	3483	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	173%	173%	173%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	60	212	43	117	463	179	80	843	95	60	569	67
RTOR Reduction (vph)	0	27	0	0	0	113	0	0	41	0	10	0
Lane Group Flow (vph)	60	228	0	117	463	66	80	843	54	60	626	0
Heavy Vehicles (%)	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			
Actuated Green, G (s)	7.0	31.5		12.3	36.8	36.8	11.3	29.5	29.5	6.7	24.9	
Effective Green, g (s)	7.0	33.5		12.3	38.8	36.8	11.3	31.5	31.5	6.7	26.9	
Actuated g/C Ratio	0.07	0.34		0.12	0.39	0.37	0.11	0.32	0.32	0.07	0.27	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	125	1661		218	1373	583	200	1115	499	119	937	
v/s Ratio Prot	0.03	0.05		c0.07	c0.13		0.05	c0.24		0.03	c0.18	
v/s Ratio Perm						0.04			0.03			
v/c Ratio	0.48	0.14		0.54	0.34	0.11	0.40	0.76	0.11	0.50	0.67	
Uniform Delay, d1	44.7	23.2		41.2	21.5	20.8	41.2	30.8	24.3	45.0	32.6	
Progression Factor	1.00	1.00		0.70	0.37	0.08	1.00	1.00	1.00	0.71	0.65	
Incremental Delay, d2	1.1	0.2		1.3	0.7	0.4	0.5	3.0	0.1	0.9	1.3	
Delay (s)	45.8	23.3		29.9	8.5	2.0	41.7	33.8	24.4	32.9	22.5	
Level of Service	D	C		C	A	A	D	C	C	C	C	
Approach Delay (s)		27.6			10.3			33.5			23.4	
Approach LOS		C			B			C			C	
Intersection Summary												
HCM Average Control Delay			24.0			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			61.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Plaza Blvd. & L Ave.

2030_Opt_AM_6 Lanes

9/9/2010




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	263	18	32	410	19	22	12	13	25	30	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	1.00
Flt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.98	1.00
Satd. Flow (prot)	1770	5037		1770	5051			1805	1583		1821	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.74	1.00		0.83	1.00
Satd. Flow (perm)	1770	5037		1770	5051			1384	1583		1541	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	38	429	29	52	668	31	36	20	21	41	49	42
RTOR Reduction (vph)	0	4	0	0	3	0	0	0	18	0	0	37
Lane Group Flow (vph)	38	454	0	52	696	0	0	56	3	0	90	5
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			4		4		4
Permitted Phases							4		4	4		4
Actuated Green, G (s)	9.6	68.4		5.3	64.1			10.3	10.3		10.3	10.3
Effective Green, g (s)	9.6	70.4		5.3	66.1			12.3	12.3		12.3	12.3
Actuated g/C Ratio	0.10	0.70		0.05	0.66			0.12	0.12		0.12	0.12
Clearance Time (s)	4.0	6.0		4.0	6.0			6.0	6.0		6.0	6.0
Vehicle Extension (s)	0.5	3.5		0.5	3.5			3.5	3.5		3.5	3.5
Lane Grp Cap (vph)	170	3546		94	3339			170	195		190	195
v/s Ratio Prot	c0.02	0.09		c0.03	c0.14							
v/s Ratio Perm								0.04	0.00		c0.06	0.00
v/c Ratio	0.22	0.13		0.55	0.21			0.33	0.01		0.47	0.03
Uniform Delay, d1	41.8	4.8		46.2	6.7			40.1	38.5		40.8	38.6
Progression Factor	0.84	0.68		1.01	0.58			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1		3.9	0.1			1.3	0.0		2.2	0.1
Delay (s)	35.2	3.4		50.6	4.0			41.4	38.6		43.0	38.6
Level of Service	D	A		D	A			D	D		D	D
Approach Delay (s)		5.8			7.2			40.6			41.6	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			11.6			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.26									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			43.3%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Plaza Blvd. & N Ave

2030_Opt_AM_6 Lanes

9/9/2010



























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	246	53	131	409	5	38	2	71	12	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			2.0	2.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	
Frt	1.00	0.97		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1770	4951		1770	5076			1778	1583		1747	
Flt Permitted	0.95	1.00		0.95	1.00			0.74	1.00		0.83	
Satd. Flow (perm)	1770	4951		1770	5076			1377	1583		1482	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	11	401	86	214	667	8	62	3	116	20	8	11
RTOR Reduction (vph)	0	28	0	0	1	0	0	0	100	0	10	0
Lane Group Flow (vph)	11	459	0	214	675	0	0	65	16	0	29	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8				4
Permitted Phases							8		8	4		
Actuated Green, G (s)	1.3	40.1		34.2	73.0			11.7	11.7		9.7	
Effective Green, g (s)	1.3	42.1		34.2	75.0			13.7	13.7		11.7	
Actuated g/C Ratio	0.01	0.42		0.34	0.75			0.14	0.14		0.12	
Clearance Time (s)	4.0	6.0		4.0	6.0			4.0	4.0		6.0	
Vehicle Extension (s)	1.9	2.2		1.8	2.2			1.9	1.9		1.9	
Lane Grp Cap (vph)	23	2084		605	3807			189	217		173	
v/s Ratio Prot	c0.01	c0.09		c0.12	0.13							
v/s Ratio Perm								c0.05	0.01		0.02	
v/c Ratio	0.48	0.22		0.35	0.18			0.34	0.07		0.17	
Uniform Delay, d1	49.0	18.5		24.6	3.6			39.1	37.6		39.8	
Progression Factor	0.96	0.67		0.37	0.34			1.00	1.00		1.00	
Incremental Delay, d2	5.6	0.2		0.1	0.1			0.4	0.1		0.2	
Delay (s)	52.7	12.7		9.3	1.3			39.5	37.7		39.9	
Level of Service	D	B		A	A			D	D		D	
Approach Delay (s)		13.6			3.2			38.3			39.9	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM Average Control Delay			11.3			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.29									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			46.3%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Plaza Blvd. & Palm Ave.

2030_Opt_AM_6 Lanes

9/9/2010













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Volume (vph)	20	210	13	87	486	98	31	144	98	131	140	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5041		1770	4958		1770	1750		1770	1832	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5041		1770	4958		1770	1750		1770	1832	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	127%	127%	127%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	33	342	21	120	671	135	51	235	160	214	228	28
RTOR Reduction (vph)	0	7	0	0	26	0	0	25	0	0	5	0
Lane Group Flow (vph)	33	356	0	120	780	0	51	370	0	214	251	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	4.5	24.7		12.7	32.9		23.5	23.5		17.1	17.1	
Effective Green, g (s)	4.5	26.7		12.7	34.9		25.5	25.5		19.1	19.1	
Actuated g/C Ratio	0.04	0.27		0.13	0.35		0.26	0.26		0.19	0.19	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.3	2.3		2.3	2.3	
Lane Grp Cap (vph)	80	1346		225	1730		451	446		338	350	
v/s Ratio Prot	c0.02	0.07		0.07	c0.16		0.03	c0.21		0.12	c0.14	
v/s Ratio Perm												
v/c Ratio	0.41	0.26		0.53	0.45		0.11	0.83		0.63	0.72	
Uniform Delay, d1	46.5	28.9		40.9	25.1		28.6	35.2		37.2	37.9	
Progression Factor	0.83	0.64		0.65	0.50		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.5		1.2	0.8		0.1	11.7		3.2	6.2	
Delay (s)	40.0	18.9		27.9	13.4		28.6	46.9		40.4	44.1	
Level of Service	D	B		C	B		C	D		D	D	
Approach Delay (s)		20.6			15.3			44.8			42.4	
Approach LOS		C			B			D			D	
Intersection Summary												
HCM Average Control Delay			27.8			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			67.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Plaza Blvd. & I-805 SB

2030_Opt_AM_6 Lanes

9/9/2010



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↗↗	↑↑					↗	↗↗	↗
Volume (vph)	0	290	269	393	624	0	0	0	0	365	1	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1686	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1686	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	127%	127%	127%	127%	100%	100%	100%	100%	127%	127%	127%
Adj. Flow (vph)	0	400	371	543	861	0	0	0	0	504	1	295
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	400	371	543	861	0	0	0	0	252	253	295
Turn Type			Free	Prot						Split		Free
Protected Phases		2		1	6					4	4	
Permitted Phases			Free									Free
Actuated Green, G (s)		46.9	100.0	20.1	71.2					19.6	19.6	100.0
Effective Green, g (s)		47.5	100.0	20.3	71.8					20.2	20.2	100.0
Actuated g/C Ratio		0.48	1.00	0.20	0.72					0.20	0.20	1.00
Clearance Time (s)		4.6		4.2	4.6					4.6	4.6	
Vehicle Extension (s)		4.5		2.0	4.5					2.0	2.0	
Lane Grp Cap (vph)		1681	1583	697	2541					340	341	1583
v/s Ratio Prot		0.11		c0.16	c0.24					0.15	c0.15	
v/s Ratio Perm			0.23									0.19
v/c Ratio		0.24	0.23	0.78	0.34					0.74	0.74	0.19
Uniform Delay, d1		15.5	0.0	37.7	5.3					37.4	37.5	0.0
Progression Factor		0.67	1.00	0.75	0.52					1.00	1.00	1.00
Incremental Delay, d2		0.3	0.3	4.7	0.3					7.4	7.4	0.3
Delay (s)		10.7	0.3	33.0	3.1					44.9	44.9	0.3
Level of Service		B	A	C	A					D	D	A
Approach Delay (s)		5.7			14.6			0.0			28.4	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM Average Control Delay			16.0			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			56.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: Plaza Blvd. & I-805 NB

2030_Opt_AM_6 Lanes

9/9/2010




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	157	538	0	0	628	634	365	0	564	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	3539			3539	1583	3433		1583			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	3539			3539	1583	3433		1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	100%	100%	127%	127%	127%	100%	127%	100%	100%	100%
Adj. Flow (vph)	217	743	0	0	867	875	504	0	779	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	217	743	0	0	867	875	504	0	779	0	0	0
Turn Type	Prot					Free	Prot		Free			
Protected Phases	5	2			6		4					
Permitted Phases						Free			Free			
Actuated Green, G (s)	10.7	71.4			56.5	100.0	19.4		100.0			
Effective Green, g (s)	10.9	72.0			57.1	100.0	20.0		100.0			
Actuated g/C Ratio	0.11	0.72			0.57	1.00	0.20		1.00			
Clearance Time (s)	4.2	4.6			4.6		4.6					
Vehicle Extension (s)	2.0	4.5			4.5		2.0					
Lane Grp Cap (vph)	374	2548			2021	1583	687		1583			
v/s Ratio Prot	0.06	0.21			0.24		c0.15					
v/s Ratio Perm						c0.55			0.49			
v/c Ratio	0.58	0.29			0.43	0.55	0.73		0.49			
Uniform Delay, d1	42.4	5.0			12.2	0.0	37.5		0.0			
Progression Factor	0.96	0.27			0.81	1.00	1.00		1.00			
Incremental Delay, d2	1.5	0.3			0.5	1.1	3.5		1.1			
Delay (s)	42.3	1.6			10.5	1.1	41.0		1.1			
Level of Service	D	A			B	A	D		A			
Approach Delay (s)		10.8			5.8		16.8				0.0	
Approach LOS		B			A		B				A	
Intersection Summary												
HCM Average Control Delay			10.5			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			56.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

7: Plaza Blvd. & Grove St.

2030_Opt_AM_6 Lanes

9/9/2010

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	821	200	22	835	3	330	13	25	2	19	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	
Frt	1.00	0.97		1.00	1.00			1.00	0.85		0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	4936		1770	5083			1777	1583		1680	
Flt Permitted	0.95	1.00		0.95	1.00			0.67	1.00		0.99	
Satd. Flow (perm)	1770	4936		1770	5083			1252	1583		1665	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%
Adj. Flow (vph)	43	1133	276	30	1153	4	456	18	35	3	26	73
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	9	0	44	0
Lane Group Flow (vph)	43	1375	0	30	1157	0	0	474	26	0	58	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases					6		4		4	8		
Actuated Green, G (s)	4.9	41.8		4.3	42.7			37.9	37.9		37.9	
Effective Green, g (s)	4.9	43.8		4.3	43.2			39.9	39.9		39.9	
Actuated g/C Ratio	0.05	0.44		0.04	0.43			0.40	0.40		0.40	
Clearance Time (s)	4.0	6.0		4.0	4.5			6.0	6.0		6.0	
Vehicle Extension (s)	2.0	2.8		2.0	2.8			2.0	2.0		2.0	
Lane Grp Cap (vph)	87	2162		76	2196			500	632		664	
v/s Ratio Prot	c0.02	c0.28		0.02	0.23							
v/s Ratio Perm								c0.38	0.02		0.03	
v/c Ratio	0.49	0.64		0.39	0.53			0.95	0.04		0.09	
Uniform Delay, d1	46.3	21.9		46.6	20.9			29.0	18.4		18.7	
Progression Factor	1.07	0.63		1.22	0.32			1.00	1.00		1.00	
Incremental Delay, d2	1.5	1.4		1.0	0.7			27.1	0.0		0.0	
Delay (s)	51.3	15.2		57.7	7.3			56.2	18.4		18.7	
Level of Service	D	B		E	A			E	B		B	
Approach Delay (s)		16.3			8.6			53.6			18.7	
Approach LOS		B			A			D			B	
Intersection Summary												
HCM Average Control Delay			19.4			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			69.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

8: Plaza Blvd. & Euclid Ave.

2030_Opt_AM_6 Lanes

9/9/2010























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	307	403	59	60	601	57	127	441	68	66	238	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	1770	5019		1770	3468		1770	3312	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	1770	5019		1770	3468		1770	3312	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	128%	128%	128%	127%	127%	127%	127%	127%	127%
Adj. Flow (vph)	424	556	81	83	836	79	175	609	94	91	329	247
RTOR Reduction (vph)	0	0	46	0	10	0	0	13	0	0	138	0
Lane Group Flow (vph)	424	556	35	83	905	0	175	690	0	91	438	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	19.8	40.8	40.8	7.3	28.3		13.7	24.1		7.8	19.2	
Effective Green, g (s)	19.8	42.8	42.8	7.3	30.3		13.7	26.1		7.8	21.2	
Actuated g/C Ratio	0.20	0.43	0.43	0.07	0.30		0.14	0.26		0.08	0.21	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	2.4	2.4	2.0	2.4		1.9	2.0		1.9	2.0	
Lane Grp Cap (vph)	680	1515	678	129	1521		242	905		138	702	
v/s Ratio Prot	c0.12	0.16		0.05	c0.18		c0.10	c0.20		0.05	0.13	
v/s Ratio Perm			0.02									
v/c Ratio	0.62	0.37	0.05	0.64	0.59		0.72	0.76		0.66	0.62	
Uniform Delay, d1	36.7	19.4	16.7	45.1	29.6		41.3	34.1		44.8	35.8	
Progression Factor	0.95	1.08	1.61	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.6	0.1	8.0	1.7		8.7	3.5		8.4	1.3	
Delay (s)	36.0	21.4	27.0	53.0	31.3		50.0	37.6		53.2	37.0	
Level of Service	D	C	C	D	C		D	D		D	D	
Approach Delay (s)		27.7			33.2			40.1			39.2	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			34.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				11.0		
Intersection Capacity Utilization			65.7%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2030_Opt_AM_6 Lanes

20: Plaza Blvd. & D Ave.

9/9/2010





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	106	12	30	263	42	18	269	76	36	197	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3484		1770	3466		1770	1863	1583	1770	1849	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3484		1770	3466		1770	1863	1583	1770	1849	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%
Adj. Flow (vph)	11	199	23	56	495	79	34	506	143	68	370	19
RTOR Reduction (vph)	0	8	0	0	11	0	0	0	19	0	2	0
Lane Group Flow (vph)	11	214	0	56	563	0	34	506	124	68	387	0
Turn Type	Prot			Prot			Prot		Perm		Prot	
Protected Phases	5	2		1	6		3	8			7	4
Permitted Phases									8			
Actuated Green, G (s)	1.0	28.9		5.5	33.4		3.7	26.1	26.1	6.0	28.4	
Effective Green, g (s)	1.0	30.9		5.5	35.4		3.7	28.1	28.1	6.0	30.4	
Actuated g/C Ratio	0.01	0.36		0.06	0.41		0.04	0.32	0.32	0.07	0.35	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	1.5	2.5		1.5	2.5		1.5	2.5	2.5	1.5	2.5	
Lane Grp Cap (vph)	20	1245		113	1418		76	605	514	123	650	
v/s Ratio Prot	0.01	0.06		c0.03	c0.16		0.02	c0.27		c0.04	0.21	
v/s Ratio Perm									0.08			
v/c Ratio	0.55	0.17		0.50	0.40		0.45	0.84	0.24	0.55	0.60	
Uniform Delay, d1	42.5	19.0		39.2	18.0		40.4	27.1	21.4	39.0	23.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.2	0.3		1.2	0.8		1.5	9.6	0.2	3.0	1.2	
Delay (s)	59.8	19.3		40.4	18.9		41.9	36.7	21.6	42.0	24.2	
Level of Service	E	B		D	B		D	D	C	D	C	
Approach Delay (s)		21.2			20.8			33.8			26.9	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			26.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			86.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			61.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

21: 8th St. & Highland Ave.

2030_Opt_AM_6 Lanes























9/9/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	195	48	119	1015	45	222	653	52	43	343	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.99		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3435		1770	3517		1770	3500		1770	3473	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3435		1770	3517		1770	3500		1770	3473	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	127%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	64	269	66	164	1401	62	362	1065	85	70	559	80
RTOR Reduction (vph)	0	26	0	0	3	0	0	6	0	0	11	0
Lane Group Flow (vph)	64	309	0	164	1460	0	362	1144	0	70	628	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.8	14.3		31.5	41.0		18.0	33.4		4.8	20.2	
Effective Green, g (s)	4.8	14.3		31.5	41.0		18.0	33.4		4.8	20.2	
Actuated g/C Ratio	0.05	0.14		0.32	0.41		0.18	0.33		0.05	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	85	491		558	1442		319	1169		85	702	
v/s Ratio Prot	0.04	c0.09		0.09	c0.42		c0.20	c0.33		0.04	0.18	
v/s Ratio Perm												
v/c Ratio	0.75	0.63		0.29	1.01		1.13	0.98		0.82	0.89	
Uniform Delay, d1	47.0	40.4		25.9	29.5		41.0	32.9		47.2	38.9	
Progression Factor	1.00	1.00		1.00	1.00		0.69	0.91		1.00	1.00	
Incremental Delay, d2	30.8	2.5		0.3	26.8		90.2	20.7		44.9	16.2	
Delay (s)	77.8	42.9		26.2	56.3		118.5	50.6		92.1	55.1	
Level of Service	E	D		C	E		F	D		F	E	
Approach Delay (s)		48.5			53.3			66.9			58.7	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM Average Control Delay			58.6			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			89.1%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Plaza Blvd. & Highland Ave.





















9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	406	90	204	233	146	69	459	153	256	582	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4947		1770	3539	1583	1770	3539	1583	1770	3504	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4947		1770	3539	1583	1770	3539	1583	1770	3504	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	173%	173%	173%	120%	120%	120%	115%	115%	115%	115%	115%	115%
Adj. Flow (vph)	211	763	169	266	304	190	86	574	191	320	728	51
RTOR Reduction (vph)	0	31	0	0	0	143	0	0	103	0	5	0
Lane Group Flow (vph)	211	901	0	266	304	48	86	574	88	320	774	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			
Actuated Green, G (s)	21.0	28.8		19.7	27.5	27.5	7.9	19.3	19.3	22.2	33.6	
Effective Green, g (s)	21.0	30.8		19.7	29.5	27.5	7.9	21.3	21.3	22.2	35.6	
Actuated g/C Ratio	0.19	0.28		0.18	0.27	0.25	0.07	0.19	0.19	0.20	0.32	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	338	1385		317	949	396	127	685	307	357	1134	
v/s Ratio Prot	0.12	c0.18		c0.15	0.09		0.05	c0.16		c0.18	0.22	
v/s Ratio Perm						0.03			0.06			
v/c Ratio	0.62	0.65		0.84	0.32	0.12	0.68	0.84	0.29	0.90	0.68	
Uniform Delay, d1	40.9	34.9		43.6	32.2	31.9	49.8	42.7	37.9	42.8	32.3	
Progression Factor	1.00	1.00		1.12	1.34	4.49	1.00	1.00	1.00	1.32	0.53	
Incremental Delay, d2	2.6	2.4		15.6	0.8	0.6	10.7	8.8	0.5	3.0	0.2	
Delay (s)	43.5	37.2		64.6	43.9	143.8	60.5	51.5	38.4	59.3	17.3	
Level of Service	D	D		E	D	F	E	D	D	E	B	
Approach Delay (s)		38.4			76.1			49.5			29.5	
Approach LOS		D			E			D			C	
Intersection Summary												
HCM Average Control Delay			45.8			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			74.8%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Plaza Blvd. & L Ave.




















9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	734	67	103	597	41	37	44	92	54	96	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.98	1.00
Satd. Flow (prot)	1770	5022		1770	5036			1821	1583		1830	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.56	1.00		0.76	1.00
Satd. Flow (perm)	1770	5022		1770	5036			1039	1583		1415	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	100%
Adj. Flow (vph)	139	1197	109	168	973	67	60	72	150	88	157	70
RTOR Reduction (vph)	0	8	0	0	6	0	0	0	116	0	0	38
Lane Group Flow (vph)	139	1298	0	168	1034	0	0	132	34	0	245	32
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4		4	4		4
Actuated Green, G (s)	21.0	57.8		13.4	50.2			22.8	22.8		22.8	22.8
Effective Green, g (s)	21.0	59.8		13.4	52.2			24.8	24.8		24.8	24.8
Actuated g/C Ratio	0.19	0.54		0.12	0.47			0.23	0.23		0.23	0.23
Clearance Time (s)	4.0	6.0		4.0	6.0			6.0	6.0		6.0	6.0
Vehicle Extension (s)	0.5	3.5		0.5	3.5			3.5	3.5		3.5	3.5
Lane Grp Cap (vph)	338	2730		216	2390			234	357		319	357
v/s Ratio Prot	0.08	c0.26		c0.09	0.21							
v/s Ratio Perm								0.13	0.02		c0.17	0.02
v/c Ratio	0.41	0.48		0.78	0.43			0.56	0.09		0.77	0.09
Uniform Delay, d1	39.1	15.4		46.9	19.1			37.8	33.7		39.9	33.7
Progression Factor	0.74	0.45		0.86	0.36			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.5		14.1	0.5			3.4	0.1		10.9	0.1
Delay (s)	29.3	7.4		54.3	7.3			41.2	33.9		50.8	33.8
Level of Service	C	A		D	A			D	C		D	C
Approach Delay (s)		9.5			13.9			37.3			47.0	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM Average Control Delay			17.2			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			65.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Plaza Blvd. & N Ave.

9/22/2010





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	736	124	246	652	4	88	5	289	67	13	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	
Flt	1.00	0.98		1.00	1.00			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.97	
Satd. Flow (prot)	1770	4975		1770	5080			1779	1583		1751	
Flt Permitted	0.95	1.00		0.95	1.00			0.65	1.00		0.57	
Satd. Flow (perm)	1770	4975		1770	5080			1203	1583		1029	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	59	1200	202	401	1063	7	143	8	471	109	21	36
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	382	0	10	0
Lane Group Flow (vph)	59	1384	0	401	1070	0	0	151	89	0	156	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	8.0	47.0		28.3	67.3			18.7	18.7		18.7	
Effective Green, g (s)	8.0	49.0		28.3	69.3			20.7	20.7		20.7	
Actuated g/C Ratio	0.07	0.45		0.26	0.63			0.19	0.19		0.19	
Clearance Time (s)	4.0	6.0		4.0	6.0			6.0	6.0		6.0	
Vehicle Extension (s)	1.9	2.2		1.8	2.2			1.9	1.9		1.9	
Lane Grp Cap (vph)	129	2216		455	3200			226	298		194	
v/s Ratio Prot	0.03	c0.28		c0.23	0.21							
v/s Ratio Perm								0.13	0.06		c0.15	
v/c Ratio	0.46	0.62		0.88	0.33			0.67	0.30		0.81	
Uniform Delay, d1	48.9	23.4		39.2	9.5			41.5	38.4		42.7	
Progression Factor	0.72	0.56		0.67	0.80			1.00	1.00		1.00	
Incremental Delay, d2	0.8	1.2		16.4	0.3			5.7	0.2		20.0	
Delay (s)	36.0	14.3		42.7	7.9			47.1	38.6		62.7	
Level of Service	D	B		D	A			D	D		E	
Approach Delay (s)		15.1			17.4			40.7			62.7	
Approach LOS		B			B			D			E	
Intersection Summary												
HCM Average Control Delay			22.4			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			71.2%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Plaza Blvd. & Palm Ave.













9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	111	1026	17	170	724	149	35	124	74	219	198	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5073		1770	4955		1770	1759		1770	1784	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5073		1770	4955		1770	1759		1770	1784	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	115%	115%	115%	115%	115%	115%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	139	1282	21	212	905	186	42	148	88	262	237	93
RTOR Reduction (vph)	0	1	0	0	26	0	0	20	0	0	13	0
Lane Group Flow (vph)	139	1302	0	212	1065	0	42	216	0	262	317	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	12.5	35.1		17.0	39.6		14.6	14.6		21.3	21.3	
Effective Green, g (s)	12.5	37.1		17.0	41.6		16.6	16.6		23.3	23.3	
Actuated g/C Ratio	0.11	0.34		0.15	0.38		0.15	0.15		0.21	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.3	2.3		2.3	2.3	
Lane Grp Cap (vph)	201	1711		274	1874		267	265		375	378	
v/s Ratio Prot	0.08	c0.26		c0.12	0.21		0.02	c0.12		0.15	c0.18	
v/s Ratio Perm												
v/c Ratio	0.69	0.76		0.77	0.57		0.16	0.82		0.70	0.84	
Uniform Delay, d1	46.9	32.5		44.7	27.1		40.6	45.2		40.1	41.5	
Progression Factor	0.79	0.67		0.81	0.68		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.3	2.5		10.6	1.1		0.2	16.9		4.9	14.5	
Delay (s)	43.4	24.2		46.8	19.7		40.8	62.1		45.0	56.0	
Level of Service	D	C		D	B		D	E		D	E	
Approach Delay (s)		26.1			24.1			58.9			51.1	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM Average Control Delay			32.0			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			72.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Plaza Blvd. & I-805 SB



















9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑
Volume (vph)	0	887	528	490	804	0	0	0	0	687	10	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1688	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1688	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	100%	100%	100%	100%	127%	127%	127%
Adj. Flow (vph)	0	1224	729	676	1110	0	0	0	0	948	14	537
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1224	729	676	1110	0	0	0	0	483	479	537
Turn Type			Free	Prot						Split		Free
Protected Phases		2		1	6					4	4	
Permitted Phases			Free									Free
Actuated Green, G (s)		36.9	110.0	24.4	65.5					35.3	35.3	110.0
Effective Green, g (s)		37.5	110.0	24.6	66.1					35.9	35.9	110.0
Actuated g/C Ratio		0.34	1.00	0.22	0.60					0.33	0.33	1.00
Clearance Time (s)		4.6		4.2	4.6					4.6	4.6	
Vehicle Extension (s)		4.5		2.0	4.5					2.0	2.0	
Lane Grp Cap (vph)		1206	1583	768	2127					549	551	1583
v/s Ratio Prot		c0.35		c0.20	0.31					c0.29	0.28	
v/s Ratio Perm			0.46									0.34
v/c Ratio		1.01	0.46	0.88	0.52					0.88	0.87	0.34
Uniform Delay, d1		36.3	0.0	41.3	12.8					35.0	34.8	0.0
Progression Factor		0.46	1.00	1.54	1.50					1.00	1.00	1.00
Incremental Delay, d2		26.7	0.8	8.2	0.7					14.5	13.3	0.6
Delay (s)		43.3	0.8	72.0	19.9					49.5	48.1	0.6
Level of Service		D	A	E	B					D	D	A
Approach Delay (s)		27.4			39.6			0.0			31.5	
Approach LOS		C			D			A			C	
Intersection Summary												
HCM Average Control Delay			32.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			101.8%			ICU Level of Service				G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: Plaza Blvd. & I-805 NB




















9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	301	1270	0	0	870	441	481	0	648	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	3539			3539	1583	3433		1583			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	3539			3539	1583	3433		1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	100%	100%	127%	127%	127%	100%	127%	100%	100%	100%
Adj. Flow (vph)	416	1753	0	0	1201	609	664	0	895	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	416	1753	0	0	1201	609	664	0	895	0	0	0
Turn Type	Prot					Free	Prot		Free			
Protected Phases	5	2			6		4					
Permitted Phases						Free			Free			
Actuated Green, G (s)	17.7	74.6			52.7	110.0	26.2		110.0			
Effective Green, g (s)	17.9	75.2			53.3	110.0	26.8		110.0			
Actuated g/C Ratio	0.16	0.68			0.48	1.00	0.24		1.00			
Clearance Time (s)	4.2	4.6			4.6		4.6					
Vehicle Extension (s)	2.0	4.5			4.5		2.0					
Lane Grp Cap (vph)	559	2419			1715	1583	836		1583			
v/s Ratio Prot	0.12	c0.50			0.34		c0.19					
v/s Ratio Perm						0.38			0.57			
v/c Ratio	0.74	0.72			0.70	0.38	0.79		0.57			
Uniform Delay, d1	43.9	10.9			22.1	0.0	39.0		0.0			
Progression Factor	1.17	1.56			0.60	1.00	1.00		1.00			
Incremental Delay, d2	0.4	0.9			1.9	0.5	4.9		1.5			
Delay (s)	51.6	17.8			15.0	0.5	43.9		1.5			
Level of Service	D	B			B	A	D		A			
Approach Delay (s)		24.3			10.2			19.5			0.0	
Approach LOS		C			B			B			A	
Intersection Summary												
HCM Average Control Delay			18.4			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			101.8%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

7: Plaza Blvd. & Grove St.






















9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	1361	451	67	955	2	298	21	51	12	23	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00	1.00		1.00	
Frt	1.00	0.96		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.99	
Satd. Flow (prot)	1770	4895		1770	5084			1780	1583		1707	
Flt Permitted	0.95	1.00		0.95	1.00			0.64	1.00		0.80	
Satd. Flow (perm)	1770	4895		1770	5084			1196	1583		1381	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%
Adj. Flow (vph)	57	1879	623	92	1318	3	411	29	70	17	32	65
RTOR Reduction (vph)	0	52	0	0	0	0	0	0	17	0	44	0
Lane Group Flow (vph)	57	2450	0	92	1321	0	0	440	53	0	70	0
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases					6		4		4	8		
Actuated Green, G (s)	6.9	51.2		8.8	53.1			34.0	34.0		34.0	
Effective Green, g (s)	6.9	53.2		8.8	55.1			36.0	36.0		36.0	
Actuated g/C Ratio	0.06	0.48		0.08	0.50			0.33	0.33		0.33	
Clearance Time (s)	4.0	6.0		4.0	6.0			6.0	6.0		6.0	
Vehicle Extension (s)	2.0	2.8		2.0	2.8			2.0	2.0		2.0	
Lane Grp Cap (vph)	111	2367		142	2547			391	518		452	
v/s Ratio Prot	0.03	c0.50		0.05	c0.26							
v/s Ratio Perm								c0.37	0.03		0.05	
v/c Ratio	0.51	1.04		0.65	0.52			1.13	0.10		0.16	
Uniform Delay, d1	49.9	28.4		49.1	18.5			37.0	25.7		26.2	
Progression Factor	1.27	0.83		0.45	0.17			1.00	1.00		1.00	
Incremental Delay, d2	1.2	25.8		3.4	0.3			84.1	0.0		0.1	
Delay (s)	64.9	49.3		25.3	3.4			121.1	25.8		26.3	
Level of Service	E	D		C	A			F	C		C	
Approach Delay (s)		49.7			4.8			108.0			26.3	
Approach LOS		D			A			F			C	
Intersection Summary												
HCM Average Control Delay			41.8			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			89.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

8: Plaza Blvd. & Euclid Ave.























9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	283	990	120	92	670	79	106	256	95	159	453	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.96		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	1770	5005		1770	3396		1770	3343	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	1770	5005		1770	3396		1770	3343	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	128%	128%	128%	127%	127%	127%	127%	127%	127%
Adj. Flow (vph)	391	1367	166	128	932	110	146	353	131	219	625	367
RTOR Reduction (vph)	0	0	79	0	13	0	0	33	0	0	74	0
Lane Group Flow (vph)	391	1367	87	128	1029	0	146	451	0	219	918	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	26.0	38.0	38.0	12.0	24.0		12.7	23.1		16.9	27.3	
Effective Green, g (s)	26.0	40.0	40.0	12.0	26.0		12.7	25.1		16.9	29.3	
Actuated g/C Ratio	0.24	0.36	0.36	0.11	0.24		0.12	0.23		0.15	0.27	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	2.4	2.4	2.0	2.4		1.9	2.0		1.9	2.0	
Lane Grp Cap (vph)	811	1287	576	193	1183		204	775		272	890	
v/s Ratio Prot	0.11	c0.39		0.07	c0.21		0.08	0.13		c0.12	c0.27	
v/s Ratio Perm			0.06									
v/c Ratio	0.48	1.06	0.15	0.66	0.87		0.72	0.58		0.81	1.03	
Uniform Delay, d1	36.2	35.0	23.6	47.1	40.4		46.9	37.8		45.0	40.4	
Progression Factor	0.36	0.31	0.16	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	33.3	0.1	6.5	8.8		9.5	0.7		15.0	38.5	
Delay (s)	13.0	44.0	3.9	53.5	49.2		56.4	38.5		59.9	78.8	
Level of Service	B	D	A	D	D		E	D		E	E	
Approach Delay (s)		34.2			49.7			42.7			75.4	
Approach LOS		C			D			D			E	
Intersection Summary												
HCM Average Control Delay			49.1			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			88.8%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

20: Plaza Blvd. & D Ave.





















9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	383	30	53	208	64	15	199	65	76	315	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3501		1770	3415		1770	1863	1583	1770	1854	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3501		1770	3415		1770	1863	1583	1770	1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%
Adj. Flow (vph)	30	720	56	100	391	120	28	374	122	143	592	19
RTOR Reduction (vph)	0	5	0	0	23	0	0	0	22	0	1	0
Lane Group Flow (vph)	30	771	0	100	488	0	28	374	100	143	610	0
Turn Type	Prot			Prot			Prot		Perm		Prot	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	3.7	32.4		8.0	36.7		3.7	26.7	26.7	11.0	34.0	
Effective Green, g (s)	3.7	34.4		8.0	38.7		3.7	28.7	28.7	11.0	36.0	
Actuated g/C Ratio	0.04	0.35		0.08	0.39		0.04	0.29	0.29	0.11	0.37	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	1.5	2.5		1.5	2.5		1.5	2.5	2.5	1.5	2.5	
Lane Grp Cap (vph)	67	1228		144	1347		67	545	463	198	680	
v/s Ratio Prot	0.02	c0.22		c0.06	0.14		0.02	0.20		c0.08	c0.33	
v/s Ratio Perm									0.06			
v/c Ratio	0.45	0.63		0.69	0.36		0.42	0.69	0.22	0.72	0.90	
Uniform Delay, d1	46.2	26.5		43.9	21.0		46.1	30.7	26.2	42.1	29.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.7	2.4		11.1	0.8		1.5	3.3	0.2	10.5	14.4	
Delay (s)	47.9	29.0		55.0	21.7		47.7	34.0	26.4	52.5	43.7	
Level of Service	D	C		D	C		D	C	C	D	D	
Approach Delay (s)		29.7			27.2			32.9			45.4	
Approach LOS		C			C			C			D	
Intersection Summary												
HCM Average Control Delay			34.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			98.1			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			71.4%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

21: 8th St. & Highland Ave.

9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	724	211	146	374	46	170	447	111	127	637	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Flt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3419		1770	3481		1770	3434		1770	3490	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3419		1770	3481		1770	3434		1770	3490	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	127%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	141	999	291	202	516	64	277	729	181	207	1039	106
RTOR Reduction (vph)	0	25	0	0	8	0	0	20	0	0	7	0
Lane Group Flow (vph)	141	1265	0	202	572	0	277	890	0	207	1138	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.3	35.0		11.0	32.7		15.0	34.0		14.0	33.0	
Effective Green, g (s)	13.3	35.0		11.0	32.7		15.0	34.0		14.0	33.0	
Actuated g/C Ratio	0.12	0.32		0.10	0.30		0.14	0.31		0.13	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	214	1088		177	1035		241	1061		225	1047	
v/s Ratio Prot	0.08	c0.37		c0.11	0.16		c0.16	0.26		0.12	c0.33	
v/s Ratio Perm												
v/c Ratio	0.66	1.16		1.14	0.55		1.15	0.84		0.92	1.09	
Uniform Delay, d1	46.2	37.5		49.5	32.5		47.5	35.4		47.4	38.5	
Progression Factor	1.00	1.00		1.00	1.00		0.64	0.53		1.00	1.00	
Incremental Delay, d2	7.1	83.7		110.7	0.6		99.0	6.6		38.7	54.5	
Delay (s)	53.3	121.2		160.2	33.1		129.5	25.4		86.1	93.0	
Level of Service	D	F		F	C		F	C		F	F	
Approach Delay (s)		114.5			66.0			49.7			92.0	
Approach LOS		F			E			D			F	
Intersection Summary												
HCM Average Control Delay			83.9			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			101.2%			ICU Level of Service			G			
Analysis Period (min)			15									
























c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: Plaza Blvd. & Highland Ave.

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	113	23	72	284	110	49	517	58	37	349	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Flt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3450		1770	3539	1583	1770	3539	1583	1770	3483	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	3450		1770	3539	1583	1770	3539	1583	1770	3483	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	173%	173%	173%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	60	212	43	117	463	179	80	843	95	60	569	67
RTOR Reduction (vph)	0	15	0	0	0	113	0	0	41	0	10	0
Lane Group Flow (vph)	60	240	0	117	463	66	80	843	54	60	626	0
Heavy Vehicles (%)	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			
Actuated Green, G (s)	7.0	31.5		12.3	36.8	36.8	11.3	29.5	29.5	6.7	24.9	
Effective Green, g (s)	7.0	33.5		12.3	38.8	36.8	11.3	31.5	31.5	6.7	26.9	
Actuated g/C Ratio	0.07	0.34		0.12	0.39	0.37	0.11	0.32	0.32	0.07	0.27	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	125	1156		218	1373	583	200	1115	499	119	937	
v/s Ratio Prot	0.03	0.07		c0.07	c0.13		0.05	c0.24		0.03	c0.18	
v/s Ratio Perm						0.04			0.03			
v/c Ratio	0.48	0.21		0.54	0.34	0.11	0.40	0.76	0.11	0.50	0.67	
Uniform Delay, d1	44.7	23.8		41.2	21.5	20.8	41.2	30.8	24.3	45.0	32.6	
Progression Factor	1.00	1.00		0.73	0.35	0.08	1.00	1.00	1.00	0.71	0.65	
Incremental Delay, d2	1.1	0.4		1.3	0.7	0.4	0.5	3.0	0.1	0.9	1.3	
Delay (s)	45.8	24.2		31.2	8.1	2.1	41.7	33.8	24.4	32.9	22.5	
Level of Service	D	C		C	A	A	D	C	C	C	C	
Approach Delay (s)		28.3			10.3			33.5			23.4	
Approach LOS		C			B			C			C	
Intersection Summary												
HCM Average Control Delay			24.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			61.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Plaza Blvd. & L Ave.

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	263	18	32	410	19	22	12	13	25	30	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0	6.0		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1805	1583		1821	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.83	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1384	1583		1541	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	38	429	29	52	668	31	36	20	21	41	49	42
RTOR Reduction (vph)	0	0	9	0	0	11	0	0	18	0	0	37
Lane Group Flow (vph)	38	429	20	52	668	20	0	56	3	0	90	5
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases			2			6	4		4	4		4
Actuated Green, G (s)	8.4	68.4	68.4	5.3	65.3	65.3		10.3	10.3		10.3	10.3
Effective Green, g (s)	8.4	70.4	68.4	5.3	67.3	65.3		12.3	12.3		12.3	12.3
Actuated g/C Ratio	0.08	0.70	0.68	0.05	0.67	0.65		0.12	0.12		0.12	0.12
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	0.5	3.5	3.5	0.5	3.5	3.5		3.5	3.5		3.5	3.5
Lane Grp Cap (vph)	149	2491	1083	94	2382	1034		170	195		190	195
v/s Ratio Prot	c0.02	0.12		c0.03	c0.19							
v/s Ratio Perm			0.01			0.01		0.04	0.00		c0.06	0.00
v/c Ratio	0.26	0.17	0.02	0.55	0.28	0.02		0.33	0.01		0.47	0.03
Uniform Delay, d1	42.9	5.0	5.1	46.2	6.6	6.1		40.1	38.5		40.8	38.6
Progression Factor	0.79	0.63	0.37	1.12	0.53	0.38		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.1	0.0	3.9	0.3	0.0		1.3	0.0		2.2	0.1
Delay (s)	34.0	3.3	1.9	55.6	3.8	2.4		41.4	38.6		43.0	38.6
Level of Service	C	A	A	E	A	A		D	D		D	D
Approach Delay (s)		5.5			7.3			40.6			41.6	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			11.6			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			43.7%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Plaza Blvd. & N Ave

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	246	53	131	409	5	38	2	71	12	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	6.0		2.0	2.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1778	1583		1747	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.83	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1377	1583		1482	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	11	401	86	214	667	8	62	3	116	20	8	11
RTOR Reduction (vph)	0	0	49	0	0	2	0	0	100	0	10	0
Lane Group Flow (vph)	11	401	37	214	667	6	0	65	16	0	29	0
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	1.3	41.1	41.1	33.2	73.0	73.0		11.7	11.7		9.7	
Effective Green, g (s)	1.3	43.1	43.1	33.2	75.0	73.0		13.7	13.7		11.7	
Actuated g/C Ratio	0.01	0.43	0.43	0.33	0.75	0.73		0.14	0.14		0.12	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		4.0	4.0		6.0	
Vehicle Extension (s)	1.9	2.2	2.2	1.8	2.2	2.2		1.9	1.9		1.9	
Lane Grp Cap (vph)	23	1525	682	588	2654	1156		189	217		173	
v/s Ratio Prot	0.01	c0.11		c0.12	0.19							
v/s Ratio Perm			0.02			0.00		c0.05	0.01		0.02	
v/c Ratio	0.48	0.26	0.05	0.36	0.25	0.01		0.34	0.07		0.17	
Uniform Delay, d1	49.0	18.3	16.6	25.4	3.9	3.7		39.1	37.6		39.8	
Progression Factor	0.95	0.71	0.57	0.34	0.28	0.31		1.00	1.00		1.00	
Incremental Delay, d2	5.6	0.4	0.2	0.1	0.2	0.0		0.4	0.1		0.2	
Delay (s)	52.2	13.3	9.6	8.7	1.3	1.1		39.5	37.7		39.9	
Level of Service	D	B	A	A	A	A		D	D		D	
Approach Delay (s)		13.5			3.1			38.3			39.9	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM Average Control Delay			11.2			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			46.3%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Plaza Blvd. & Palm Ave.

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	210	13	87	486	98	31	144	98	131	140	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1750		1770	1832	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1750		1770	1832	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	127%	127%	127%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	33	342	21	120	671	135	51	235	160	214	228	28
RTOR Reduction (vph)	0	0	16	0	0	90	0	25	0	0	5	0
Lane Group Flow (vph)	33	342	5	120	671	45	51	370	0	214	251	0
Turn Type	Prot		Perm	Prot		Perm	Split			Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						
Actuated Green, G (s)	4.5	25.0	25.0	12.7	33.2	33.2	23.2	23.2		17.1	17.1	
Effective Green, g (s)	4.5	27.0	25.0	12.7	35.2	33.2	25.2	25.2		19.1	19.1	
Actuated g/C Ratio	0.04	0.27	0.25	0.13	0.35	0.33	0.25	0.25		0.19	0.19	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.3	2.3		2.3	2.3	
Lane Grp Cap (vph)	80	956	396	225	1246	526	446	441		338	350	
v/s Ratio Prot	0.02	c0.10		0.07	c0.19		0.03	c0.21		0.12	c0.14	
v/s Ratio Perm			0.00			0.03						
v/c Ratio	0.41	0.36	0.01	0.53	0.54	0.09	0.11	0.84		0.63	0.72	
Uniform Delay, d1	46.5	29.5	28.2	40.9	25.9	23.0	28.8	35.5		37.2	37.9	
Progression Factor	0.87	0.74	0.80	0.63	0.52	0.16	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	1.0	0.1	1.2	1.6	0.3	0.1	12.7		3.2	6.2	
Delay (s)	41.6	22.9	22.6	27.0	15.1	4.1	28.9	48.2		40.4	44.1	
Level of Service	D	C	C	C	B	A	C	D		D	D	
Approach Delay (s)		24.5			15.0			46.0			42.4	
Approach LOS		C			B			D			D	
Intersection Summary												
HCM Average Control Delay			28.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			67.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Plaza Blvd. & I-805 SB

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↗↗	↑↑					↗	↗↑	↗
Volume (vph)	0	290	269	393	624	0	0	0	0	365	1	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1686	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1686	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	100%	127%	127%	127%	127%	100%	100%	100%	100%	127%	127%	127%
Adj. Flow (vph)	0	400	371	543	861	0	0	0	0	504	1	295
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	400	371	543	861	0	0	0	0	252	253	295
Turn Type			Free	Prot						Split		Free
Protected Phases		2		1	6					4	4	
Permitted Phases			Free									Free
Actuated Green, G (s)		46.9	100.0	20.1	71.2					19.6	19.6	100.0
Effective Green, g (s)		47.5	100.0	20.3	71.8					20.2	20.2	100.0
Actuated g/C Ratio		0.48	1.00	0.20	0.72					0.20	0.20	1.00
Clearance Time (s)		4.6		4.2	4.6					4.6	4.6	
Vehicle Extension (s)		4.5		2.0	4.5					2.0	2.0	
Lane Grp Cap (vph)		1681	1583	697	2541					340	341	1583
v/s Ratio Prot		0.11		c0.16	c0.24					0.15	c0.15	
v/s Ratio Perm			0.23									0.19
v/c Ratio		0.24	0.23	0.78	0.34					0.74	0.74	0.19
Uniform Delay, d1		15.5	0.0	37.7	5.3					37.4	37.5	0.0
Progression Factor		0.70	1.00	0.83	0.51					1.00	1.00	1.00
Incremental Delay, d2		0.3	0.3	4.7	0.3					7.4	7.4	0.3
Delay (s)		11.1	0.3	36.1	3.0					44.9	44.9	0.3
Level of Service		B	A	D	A					D	D	A
Approach Delay (s)		5.9			15.8			0.0			28.4	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM Average Control Delay			16.6			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			56.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: Plaza Blvd. & I-805 NB

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	157	538	0	0	628	634	365	0	564	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	3539			3539	1583	3433		1583			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	3539			3539	1583	3433		1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	100%	100%	127%	127%	127%	100%	127%	100%	100%	100%
Adj. Flow (vph)	217	743	0	0	867	875	504	0	779	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	217	743	0	0	867	875	504	0	779	0	0	0
Turn Type	Prot					Free	Prot		Free			
Protected Phases	5	2			6		4					
Permitted Phases						Free			Free			
Actuated Green, G (s)	10.7	71.4			56.5	100.0	19.4		100.0			
Effective Green, g (s)	10.9	72.0			57.1	100.0	20.0		100.0			
Actuated g/C Ratio	0.11	0.72			0.57	1.00	0.20		1.00			
Clearance Time (s)	4.2	4.6			4.6		4.6					
Vehicle Extension (s)	2.0	4.5			4.5		2.0					
Lane Grp Cap (vph)	374	2548			2021	1583	687		1583			
v/s Ratio Prot	0.06	0.21			0.24		c0.15					
v/s Ratio Perm						c0.55			0.49			
v/c Ratio	0.58	0.29			0.43	0.55	0.73		0.49			
Uniform Delay, d1	42.4	5.0			12.2	0.0	37.5		0.0			
Progression Factor	0.97	0.27			1.03	1.00	1.00		1.00			
Incremental Delay, d2	1.5	0.3			0.4	0.9	3.5		1.1			
Delay (s)	42.8	1.6			13.0	0.9	41.0		1.1			
Level of Service	D	A			B	A	D		A			
Approach Delay (s)		10.9			6.9		16.8				0.0	
Approach LOS		B			A		B				A	
Intersection Summary												
HCM Average Control Delay			11.1			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			4.0			
Intersection Capacity Utilization			56.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

7: Plaza Blvd. & Grove St.

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	821	200	22	835	3	330	13	25	2	19	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.5		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1777	1583		1680	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.67	1.00		0.99	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1252	1583		1665	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%
Adj. Flow (vph)	43	1133	276	30	1153	4	456	18	35	3	26	73
RTOR Reduction (vph)	0	0	64	0	0	2	0	0	9	0	44	0
Lane Group Flow (vph)	43	1133	212	30	1153	2	0	474	26	0	58	0
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2		6	6	4		4	8		
Actuated Green, G (s)	4.9	41.8	41.8	4.3	42.7	42.7		37.9	37.9		37.9	
Effective Green, g (s)	4.9	43.8	43.8	4.3	43.2	42.7		39.9	39.9		39.9	
Actuated g/C Ratio	0.05	0.44	0.44	0.04	0.43	0.43		0.40	0.40		0.40	
Clearance Time (s)	4.0	6.0	6.0	4.0	4.5	4.5		6.0	6.0		6.0	
Vehicle Extension (s)	2.0	2.8	2.8	2.0	2.8	2.8		2.0	2.0		2.0	
Lane Grp Cap (vph)	87	1550	693	76	1529	676		500	632		664	
v/s Ratio Prot	c0.02	0.32		0.02	c0.33			c0.38	0.02		0.03	
v/s Ratio Perm			0.13			0.00			0.02		0.03	
v/c Ratio	0.49	0.73	0.31	0.39	0.75	0.00		0.95	0.04		0.09	
Uniform Delay, d1	46.3	23.2	18.2	46.6	23.9	16.4		29.0	18.4		18.7	
Progression Factor	1.04	0.62	0.47	1.07	1.00	1.37		1.00	1.00		1.00	
Incremental Delay, d2	1.5	2.9	1.1	0.8	2.4	0.0		27.1	0.0		0.0	
Delay (s)	49.8	17.3	9.7	50.6	26.3	22.6		56.2	18.4		18.7	
Level of Service	D	B	A	D	C	C		E	B		B	
Approach Delay (s)		16.8			26.9			53.6			18.7	
Approach LOS		B			C			D			B	
Intersection Summary												
HCM Average Control Delay			26.3			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			70.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

8: Plaza Blvd. & Euclid Ave.

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	307	403	59	60	601	57	127	441	68	66	238	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	1770	3493		1770	3468		1770	3312	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	1770	3493		1770	3468		1770	3312	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	128%	128%	128%	127%	127%	127%	127%	127%	127%
Adj. Flow (vph)	424	556	81	83	836	79	175	609	94	91	329	247
RTOR Reduction (vph)	0	0	45	0	7	0	0	12	0	0	138	0
Lane Group Flow (vph)	424	556	36	83	908	0	175	691	0	91	438	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	17.8	42.4	42.4	7.3	31.9		12.9	22.9		7.4	18.4	
Effective Green, g (s)	17.8	44.4	44.4	7.3	33.9		12.9	24.9		7.4	20.4	
Actuated g/C Ratio	0.18	0.44	0.44	0.07	0.34		0.13	0.25		0.07	0.20	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		3.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	2.4	2.4	2.0	2.4		1.9	2.0		1.9	2.0	
Lane Grp Cap (vph)	611	1571	703	129	1184		228	864		131	676	
v/s Ratio Prot	c0.12	0.16		0.05	c0.26		c0.10	c0.20		0.05	0.13	
v/s Ratio Perm			0.02									
v/c Ratio	0.69	0.35	0.05	0.64	0.77		0.77	0.80		0.69	0.65	
Uniform Delay, d1	38.5	18.3	15.8	45.1	29.5		42.1	35.2		45.2	36.5	
Progression Factor	0.42	0.21	0.08	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.5	0.1	8.0	4.8		13.0	4.9		12.1	1.6	
Delay (s)	18.1	4.3	1.4	53.0	34.3		55.1	40.1		57.3	38.1	
Level of Service	B	A	A	D	C		E	D		E	D	
Approach Delay (s)		9.6			35.9			43.1			40.7	
Approach LOS		A			D			D			D	
Intersection Summary												
HCM Average Control Delay			30.8			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			11.0			
Intersection Capacity Utilization			72.6%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

20: Plaza Blvd. & D Ave.

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	106	12	30	263	42	18	269	76	36	197	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Flt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3484		1770	3466		1770	1863	1583	1770	1849	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3484		1770	3466		1770	1863	1583	1770	1849	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%
Adj. Flow (vph)	11	199	23	56	495	79	34	506	143	68	370	19
RTOR Reduction (vph)	0	8	0	0	11	0	0	0	19	0	2	0
Lane Group Flow (vph)	11	214	0	56	563	0	34	506	124	68	387	0
Turn Type	Prot			Prot			Prot		Perm		Prot	
Protected Phases	5	2		1	6		3	8			7	4
Permitted Phases									8			
Actuated Green, G (s)	1.0	28.9		5.5	33.4		3.7	26.1	26.1	6.0	28.4	
Effective Green, g (s)	1.0	30.9		5.5	35.4		3.7	28.1	28.1	6.0	30.4	
Actuated g/C Ratio	0.01	0.36		0.06	0.41		0.04	0.32	0.32	0.07	0.35	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	1.5	2.5		1.5	2.5		1.5	2.5	2.5	1.5	2.5	
Lane Grp Cap (vph)	20	1245		113	1418		76	605	514	123	650	
v/s Ratio Prot	0.01	0.06		c0.03	c0.16		0.02	c0.27		c0.04	0.21	
v/s Ratio Perm									0.08			
v/c Ratio	0.55	0.17		0.50	0.40		0.45	0.84	0.24	0.55	0.60	
Uniform Delay, d1	42.5	19.0		39.2	18.0		40.4	27.1	21.4	39.0	23.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	17.2	0.3		1.2	0.8		1.5	9.6	0.2	3.0	1.2	
Delay (s)	59.8	19.3		40.4	18.9		41.9	36.7	21.6	42.0	24.2	
Level of Service	E	B		D	B		D	D	C	D	C	
Approach Delay (s)		21.2			20.8			33.8			26.9	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			26.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			86.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			61.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

21: 8th St. & Highland Ave.

2030_Opt_AM_4 Ln plus Transit-only Ln

9/9/2010
























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	195	48	119	1015	45	222	653	52	43	343	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.99		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3435		1770	3517		1770	3500		1770	3473	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3435		1770	3517		1770	3500		1770	3473	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	127%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	64	269	66	164	1401	62	362	1065	85	70	559	80
RTOR Reduction (vph)	0	26	0	0	3	0	0	6	0	0	11	0
Lane Group Flow (vph)	64	309	0	164	1460	0	362	1144	0	70	628	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.8	14.3		31.5	41.0		18.0	33.4		4.8	20.2	
Effective Green, g (s)	4.8	14.3		31.5	41.0		18.0	33.4		4.8	20.2	
Actuated g/C Ratio	0.05	0.14		0.32	0.41		0.18	0.33		0.05	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	85	491		558	1442		319	1169		85	702	
v/s Ratio Prot	0.04	c0.09		0.09	c0.42		c0.20	c0.33		0.04	0.18	
v/s Ratio Perm												
v/c Ratio	0.75	0.63		0.29	1.01		1.13	0.98		0.82	0.89	
Uniform Delay, d1	47.0	40.4		25.9	29.5		41.0	32.9		47.2	38.9	
Progression Factor	1.00	1.00		1.00	1.00		0.70	0.91		1.00	1.00	
Incremental Delay, d2	30.8	2.5		0.3	26.8		90.2	20.7		44.9	16.2	
Delay (s)	77.8	42.9		26.2	56.3		118.7	50.7		92.1	55.1	
Level of Service	E	D		C	E		F	D		F	E	
Approach Delay (s)		48.5			53.3			67.0			58.7	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM Average Control Delay			58.6			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			89.1%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: Plaza Blvd. & Highland Ave.























9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	406	90	204	233	146	69	459	153	256	582	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3443		1770	3539	1583	1770	3539	1583	1770	3504	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3443		1770	3539	1583	1770	3539	1583	1770	3504	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	173%	173%	173%	120%	120%	120%	115%	115%	115%	115%	115%	115%
Adj. Flow (vph)	211	763	169	266	304	190	86	574	191	320	728	51
RTOR Reduction (vph)	0	17	0	0	0	140	0	0	104	0	5	0
Lane Group Flow (vph)	211	915	0	266	304	50	86	574	87	320	774	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			
Actuated Green, G (s)	21.0	31.6		18.2	28.8	28.8	7.5	18.9	18.9	21.3	32.7	
Effective Green, g (s)	21.0	33.6		18.2	30.8	28.8	7.5	20.9	20.9	21.3	34.7	
Actuated g/C Ratio	0.19	0.31		0.17	0.28	0.26	0.07	0.19	0.19	0.19	0.32	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	338	1052		293	991	414	121	672	301	343	1105	
v/s Ratio Prot	0.12	c0.27		c0.15	0.09		0.05	c0.16		c0.18	0.22	
v/s Ratio Perm						0.03			0.06			
v/c Ratio	0.62	0.87		0.91	0.31	0.12	0.71	0.85	0.29	0.93	0.70	
Uniform Delay, d1	40.9	36.1		45.1	31.2	30.9	50.2	43.1	38.2	43.6	33.1	
Progression Factor	1.00	1.00		1.02	1.21	3.61	1.00	1.00	1.00	1.33	0.56	
Incremental Delay, d2	2.6	9.8		26.6	0.7	0.5	15.1	10.3	0.5	4.9	0.2	
Delay (s)	43.5	45.9		72.5	38.5	112.2	65.3	53.4	38.7	63.0	18.6	
Level of Service	D	D		E	D	F	E	D	D	E	B	
Approach Delay (s)		45.4			68.8			51.3			31.5	
Approach LOS		D			E			D			C	
Intersection Summary												
HCM Average Control Delay			47.4			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			82.2%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Plaza Blvd. & L Ave.






















9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	734	67	103	597	41	37	44	92	54	96	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0	6.0		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1821	1583		1830	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.55	1.00		0.75	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1016	1583		1402	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	100%
Adj. Flow (vph)	139	1197	109	168	973	67	60	72	150	88	157	70
RTOR Reduction (vph)	0	0	43	0	0	33	0	0	117	0	0	37
Lane Group Flow (vph)	139	1197	66	168	973	34	0	132	33	0	245	33
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases			2			6	4		4	4		4
Actuated Green, G (s)	16.0	58.6	58.6	13.1	55.7	55.7		22.3	22.3		22.3	22.3
Effective Green, g (s)	16.0	60.6	58.6	13.1	57.7	55.7		24.3	24.3		24.3	24.3
Actuated g/C Ratio	0.15	0.55	0.53	0.12	0.52	0.51		0.22	0.22		0.22	0.22
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)	0.5	3.5	3.5	0.5	3.5	3.5		3.5	3.5		3.5	3.5
Lane Grp Cap (vph)	257	1950	843	211	1856	802		224	350		310	350
v/s Ratio Prot	0.08	c0.34		c0.09	0.27							
v/s Ratio Perm			0.04			0.02		0.13	0.02		c0.17	0.02
v/c Ratio	0.54	0.61	0.08	0.80	0.52	0.04		0.59	0.09		0.79	0.09
Uniform Delay, d1	43.6	16.8	12.5	47.2	17.1	13.7		38.4	34.1		40.4	34.1
Progression Factor	0.71	0.42	0.12	1.41	0.27	0.04		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9	1.0	0.1	15.6	0.9	0.1		4.2	0.1		13.2	0.1
Delay (s)	31.9	8.0	1.6	81.9	5.7	0.7		42.6	34.2		53.6	34.2
Level of Service	C	A	A	F	A	A		D	C		D	C
Approach Delay (s)		9.8			16.0			38.1			49.3	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM Average Control Delay			18.4				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			72.7%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Plaza Blvd. & N Ave.

9/22/2010























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	736	124	246	652	4	88	5	289	67	13	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	6.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1779	1583		1751	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.65	1.00		0.56	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1204	1583		1021	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	59	1200	202	401	1063	7	143	8	471	109	21	36
RTOR Reduction (vph)	0	0	86	0	0	3	0	0	384	0	9	0
Lane Group Flow (vph)	59	1200	116	401	1063	4	0	151	87	0	157	0
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	8.0	48.3	48.3	27.4	67.7	67.7		18.3	18.3		18.3	
Effective Green, g (s)	8.0	50.3	50.3	27.4	69.7	67.7		20.3	20.3		20.3	
Actuated g/C Ratio	0.07	0.46	0.46	0.25	0.63	0.62		0.18	0.18		0.18	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		6.0	6.0		6.0	
Vehicle Extension (s)	1.9	2.2	2.2	1.8	2.2	2.2		1.9	1.9		1.9	
Lane Grp Cap (vph)	129	1618	724	441	2242	974		222	292		188	
v/s Ratio Prot	0.03	c0.34		c0.23	0.30							
v/s Ratio Perm			0.07			0.00		0.13	0.05		c0.15	
v/c Ratio	0.46	0.74	0.16	0.91	0.47	0.00		0.68	0.30		0.84	
Uniform Delay, d1	48.9	24.5	17.5	40.1	10.6	8.2		41.8	38.7		43.2	
Progression Factor	0.71	0.53	0.16	0.75	1.39	0.82		1.00	1.00		1.00	
Incremental Delay, d2	0.8	2.6	0.4	20.4	0.7	0.0		6.7	0.2		25.2	
Delay (s)	35.3	15.6	3.1	50.3	15.4	6.7		48.5	38.9		68.4	
Level of Service	D	B	A	D	B	A		D	D		E	
Approach Delay (s)		14.7			24.8			41.2			68.4	
Approach LOS		B			C			D			E	
Intersection Summary												
HCM Average Control Delay			25.5			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			76.2%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Plaza Blvd. & Palm Ave.













9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	111	1026	17	170	724	149	35	124	74	219	198	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1759		1770	1784	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1759		1770	1784	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	115%	115%	115%	115%	115%	115%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	139	1282	21	212	905	186	42	148	88	262	237	93
RTOR Reduction (vph)	0	0	9	0	0	109	0	19	0	0	13	0
Lane Group Flow (vph)	139	1282	12	212	905	77	42	217	0	262	317	0
Turn Type	Prot		Perm	Prot		Perm	Split			Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						
Actuated Green, G (s)	12.5	42.0	42.0	14.0	43.5	43.5	12.4	12.4		19.6	19.6	
Effective Green, g (s)	12.5	44.0	42.0	14.0	45.5	43.5	14.4	14.4		21.6	21.6	
Actuated g/C Ratio	0.11	0.40	0.38	0.13	0.41	0.40	0.13	0.13		0.20	0.20	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.3	2.3		2.3	2.3	
Lane Grp Cap (vph)	201	1416	604	225	1464	626	232	230		348	350	
v/s Ratio Prot	0.08	c0.36		c0.12	0.26		0.02	c0.12		0.15	c0.18	
v/s Ratio Perm			0.01			0.05						
v/c Ratio	0.69	0.91	0.02	0.94	0.62	0.12	0.18	0.94		0.75	0.91	
Uniform Delay, d1	46.9	31.0	21.2	47.6	25.4	21.1	42.6	47.4		41.7	43.2	
Progression Factor	1.06	0.54	0.29	0.76	0.59	0.29	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.5	7.0	0.0	40.8	1.8	0.4	0.2	43.3		8.3	25.7	
Delay (s)	55.3	23.9	6.2	77.2	16.7	6.6	42.8	90.7		50.0	68.9	
Level of Service	E	C	A	E	B	A	D	F		D	E	
Approach Delay (s)		26.7			25.1			83.5			60.5	
Approach LOS		C			C			F			E	
Intersection Summary												
HCM Average Control Delay			36.0			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			82.3%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Plaza Blvd. & I-805 SB



















9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑
Volume (vph)	0	887	528	490	804	0	0	0	0	687	10	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1583	3433	3539					1681	1688	1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1583	3433	3539					1681	1688	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	100%	100%	100%	100%	127%	127%	127%
Adj. Flow (vph)	0	1224	729	676	1110	0	0	0	0	948	14	537
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1224	729	676	1110	0	0	0	0	483	479	537
Turn Type			Free	Prot						Split		Free
Protected Phases		2		1	6					4	4	
Permitted Phases			Free									Free
Actuated Green, G (s)		36.9	110.0	24.4	65.5					35.3	35.3	110.0
Effective Green, g (s)		37.5	110.0	24.6	66.1					35.9	35.9	110.0
Actuated g/C Ratio		0.34	1.00	0.22	0.60					0.33	0.33	1.00
Clearance Time (s)		4.6		4.2	4.6					4.6	4.6	
Vehicle Extension (s)		4.5		2.0	4.5					2.0	2.0	
Lane Grp Cap (vph)		1206	1583	768	2127					549	551	1583
v/s Ratio Prot		c0.35		c0.20	0.31					c0.29	0.28	
v/s Ratio Perm			0.46									0.34
v/c Ratio		1.01	0.46	0.88	0.52					0.88	0.87	0.34
Uniform Delay, d1		36.3	0.0	41.3	12.8					35.0	34.8	0.0
Progression Factor		0.58	1.00	1.56	1.55					1.00	1.00	1.00
Incremental Delay, d2		24.8	0.6	8.2	0.7					14.5	13.3	0.6
Delay (s)		45.7	0.6	72.5	20.5					49.5	48.1	0.6
Level of Service		D	A	E	C					D	D	A
Approach Delay (s)		28.9			40.2			0.0			31.5	
Approach LOS		C			D			A			C	
Intersection Summary												
HCM Average Control Delay			33.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			101.8%			ICU Level of Service				G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: Plaza Blvd. & I-805 NB

9/22/2010






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	301	1270	0	0	870	441	481	0	648	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	0.95			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	3539			3539	1583	3433		1583			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	3539			3539	1583	3433		1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	100%	100%	127%	127%	127%	100%	127%	100%	100%	100%
Adj. Flow (vph)	416	1753	0	0	1201	609	664	0	895	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	416	1753	0	0	1201	609	664	0	895	0	0	0
Turn Type	Prot					Free	Prot		Free			
Protected Phases	5	2			6		4					
Permitted Phases						Free			Free			
Actuated Green, G (s)	17.7	74.6			52.7	110.0	26.2		110.0			
Effective Green, g (s)	17.9	75.2			53.3	110.0	26.8		110.0			
Actuated g/C Ratio	0.16	0.68			0.48	1.00	0.24		1.00			
Clearance Time (s)	4.2	4.6			4.6		4.6					
Vehicle Extension (s)	2.0	4.5			4.5		2.0					
Lane Grp Cap (vph)	559	2419			1715	1583	836		1583			
v/s Ratio Prot	0.12	c0.50			0.34		c0.19					
v/s Ratio Perm						0.38			0.57			
v/c Ratio	0.74	0.72			0.70	0.38	0.79		0.57			
Uniform Delay, d1	43.9	10.9			22.1	0.0	39.0		0.0			
Progression Factor	1.16	1.55			0.67	1.00	1.00		1.00			
Incremental Delay, d2	0.4	0.9			1.4	0.4	4.9		1.5			
Delay (s)	51.5	17.8			16.3	0.4	43.9		1.5			
Level of Service	D	B			B	A	D		A			
Approach Delay (s)		24.2			11.0			19.5			0.0	
Approach LOS		C			B			B			A	
Intersection Summary												
HCM Average Control Delay			18.6			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			101.8%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

7: Plaza Blvd. & Grove St.























9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	1361	451	67	955	2	298	21	51	12	23	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	6.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.99	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1780	1583		1707	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.64	1.00		0.78	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1191	1583		1337	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%	127%
Adj. Flow (vph)	57	1879	623	92	1318	3	411	29	70	17	32	65
RTOR Reduction (vph)	0	0	85	0	0	1	0	0	18	0	44	0
Lane Group Flow (vph)	57	1879	538	92	1318	2	0	440	52	0	70	0
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2		6	6	4		4	8		
Actuated Green, G (s)	6.7	53.0	53.0	8.0	54.3	54.3		33.0	33.0		33.0	
Effective Green, g (s)	6.7	55.0	55.0	8.0	56.3	54.3		35.0	35.0		35.0	
Actuated g/C Ratio	0.06	0.50	0.50	0.07	0.51	0.49		0.32	0.32		0.32	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		6.0	6.0		6.0	
Vehicle Extension (s)	2.0	2.8	2.8	2.0	2.8	2.8		2.0	2.0		2.0	
Lane Grp Cap (vph)	108	1770	792	129	1811	781		379	504		425	
v/s Ratio Prot	0.03	c0.53		0.05	c0.37							
v/s Ratio Perm			0.34			0.00		c0.37	0.03		0.05	
v/c Ratio	0.53	1.06	0.68	0.71	0.73	0.00		1.16	0.10		0.17	
Uniform Delay, d1	50.1	27.5	20.8	49.9	20.9	14.1		37.5	26.4		27.0	
Progression Factor	1.24	0.87	0.73	0.72	0.52	0.79		1.00	1.00		1.00	
Incremental Delay, d2	1.6	37.3	3.5	6.6	1.2	0.0		97.8	0.0		0.1	
Delay (s)	63.8	61.1	18.8	42.6	12.0	11.1		135.3	26.5		27.1	
Level of Service	E	E	B	D	B	B		F	C		C	
Approach Delay (s)		50.9			14.0			120.4			27.1	
Approach LOS		D			B			F			C	
Intersection Summary												
HCM Average Control Delay			46.7			HCM Level of Service			D			
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			91.5%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

8: Plaza Blvd. & Euclid Ave.























9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	283	990	120	92	670	79	106	256	95	159	453	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.96		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	1770	3483		1770	3396		1770	3343	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	1770	3483		1770	3396		1770	3343	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	128%	128%	128%	127%	127%	127%	127%	127%	127%
Adj. Flow (vph)	391	1367	166	128	932	110	146	353	131	219	625	367
RTOR Reduction (vph)	0	0	67	0	8	0	0	34	0	0	78	0
Lane Group Flow (vph)	391	1367	99	128	1034	0	146	450	0	219	914	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	15.0	42.3	42.3	9.7	37.0		10.0	22.7		15.3	28.0	
Effective Green, g (s)	15.0	44.3	44.3	9.7	39.0		10.0	24.7		15.3	30.0	
Actuated g/C Ratio	0.14	0.40	0.40	0.09	0.35		0.09	0.22		0.14	0.27	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	2.0	2.4	2.4	2.0	2.4		1.9	2.0		1.9	2.0	
Lane Grp Cap (vph)	468	1425	638	156	1235		161	763		246	912	
v/s Ratio Prot	0.11	c0.39		0.07	c0.30		0.08	0.13		c0.12	c0.27	
v/s Ratio Perm			0.06									
v/c Ratio	0.84	0.96	0.15	0.82	0.84		0.91	0.59		0.89	1.00	
Uniform Delay, d1	46.3	32.0	20.9	49.3	32.6		49.5	38.1		46.5	40.0	
Progression Factor	0.48	0.25	0.07	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	2.4	0.0	26.8	6.8		43.7	0.8		29.7	30.4	
Delay (s)	23.5	10.4	1.4	76.1	39.4		93.2	38.9		76.2	70.4	
Level of Service	C	B	A	E	D		F	D		E	E	
Approach Delay (s)		12.3			43.4			51.5			71.4	
Approach LOS		B			D			D			E	
Intersection Summary												
HCM Average Control Delay			39.2			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			88.8%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

20: Plaza Blvd. & D Ave.





















9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	383	30	53	208	64	15	199	65	76	315	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3501		1770	3415		1770	1863	1583	1770	1854	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3501		1770	3415		1770	1863	1583	1770	1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%	173%
Adj. Flow (vph)	30	720	56	100	391	120	28	374	122	143	592	19
RTOR Reduction (vph)	0	5	0	0	23	0	0	0	22	0	1	0
Lane Group Flow (vph)	30	771	0	100	488	0	28	374	100	143	610	0
Turn Type	Prot			Prot			Prot		Perm		Prot	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	3.7	32.4		8.0	36.7		3.7	26.7	26.7	11.0	34.0	
Effective Green, g (s)	3.7	34.4		8.0	38.7		3.7	28.7	28.7	11.0	36.0	
Actuated g/C Ratio	0.04	0.35		0.08	0.39		0.04	0.29	0.29	0.11	0.37	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	1.5	2.5		1.5	2.5		1.5	2.5	2.5	1.5	2.5	
Lane Grp Cap (vph)	67	1228		144	1347		67	545	463	198	680	
v/s Ratio Prot	0.02	c0.22		c0.06	0.14		0.02	0.20		c0.08	c0.33	
v/s Ratio Perm									0.06			
v/c Ratio	0.45	0.63		0.69	0.36		0.42	0.69	0.22	0.72	0.90	
Uniform Delay, d1	46.2	26.5		43.9	21.0		46.1	30.7	26.2	42.1	29.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.7	2.4		11.1	0.8		1.5	3.3	0.2	10.5	14.4	
Delay (s)	47.9	29.0		55.0	21.7		47.7	34.0	26.4	52.5	43.7	
Level of Service	D	C		D	C		D	C	C	D	D	
Approach Delay (s)		29.7			27.2			32.9			45.4	
Approach LOS		C			C			C			D	
Intersection Summary												
HCM Average Control Delay			34.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			98.1			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			71.4%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

21: 8th St. & Highland Ave.

9/22/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	724	211	146	374	46	170	447	111	127	637	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Flt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3419		1770	3481		1770	3434		1770	3490	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3419		1770	3481		1770	3434		1770	3490	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	127%	127%	127%	127%	127%	127%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	141	999	291	202	516	64	277	729	181	207	1039	106
RTOR Reduction (vph)	0	25	0	0	8	0	0	20	0	0	7	0
Lane Group Flow (vph)	141	1265	0	202	572	0	277	890	0	207	1138	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.3	35.0		11.0	32.7		15.0	34.0		14.0	33.0	
Effective Green, g (s)	13.3	35.0		11.0	32.7		15.0	34.0		14.0	33.0	
Actuated g/C Ratio	0.12	0.32		0.10	0.30		0.14	0.31		0.13	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	214	1088		177	1035		241	1061		225	1047	
v/s Ratio Prot	0.08	c0.37		c0.11	0.16		c0.16	0.26		0.12	c0.33	
v/s Ratio Perm												
v/c Ratio	0.66	1.16		1.14	0.55		1.15	0.84		0.92	1.09	
Uniform Delay, d1	46.2	37.5		49.5	32.5		47.5	35.4		47.4	38.5	
Progression Factor	1.00	1.00		1.00	1.00		0.61	0.50		1.00	1.00	
Incremental Delay, d2	7.1	83.7		110.7	0.6		98.8	6.5		38.7	54.5	
Delay (s)	53.3	121.2		160.2	33.1		127.9	24.1		86.1	93.0	
Level of Service	D	F		F	C		F	C		F	F	
Approach Delay (s)		114.5			66.0			48.3			92.0	
Approach LOS		F			E			D			F	
Intersection Summary												
HCM Average Control Delay			83.6			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			101.2%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

**APPENDIX C:
TRIP GENERATION REPORTS**

CVSB(Chula Vista Southbay)- 2030 Base
trip generation and land use by zone

page 1

Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
3946	4112	RIGHT-OF-WAY	acre		0.4	0.	0.
3946		TOTAL				0.	0.
3990	101	SINGLE FAMILY	du		176.0	2746.	1916.
3990	4112	RIGHT-OF-WAY	acre		9.8	0.	0.
3990		TOTAL				2746.	1916.
3992	101	SINGLE FAMILY	du		200.0	3120.	2177.
3992	4112	RIGHT-OF-WAY	acre		11.7	0.	0.
3992		TOTAL				3120.	2177.
4001	101	SINGLE FAMILY	du		229.0	3572.	2493.
4001	4112	RIGHT-OF-WAY	acre		13.8	0.	0.
4001	9101	INACTIVE USE	acre		0.4	0.	0.
4001		TOTAL				3572.	2493.
4002	101	SINGLE FAMILY	du		47.0	733.	512.
4002	162	NC MU MULTI-FAMILY	du		76.0	585.	411.
4002	4112	RIGHT-OF-WAY	acre		5.2	0.	0.
4002	5027	NC MU RETAIL	acre		37.7	5634.	4090.
4002	6012	NC MU OFFICE	acre		22.7	539.	413.
4002		TOTAL				7491.	5426.
4006	101	SINGLE FAMILY	du		290.0	4524.	3157.
4006	4112	RIGHT-OF-WAY	acre		22.2	0.	0.
4006	4113	COMMUNICATION OR UTILITY	acre		2.0	8.	6.
4006	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4006	9101	INACTIVE USE	acre		2.4	0.	0.
4006		TOTAL				6651.	4348.
4015	101	SINGLE FAMILY	du		76.0	1186.	827.
4015	4112	RIGHT-OF-WAY	acre		10.4	0.	0.
4015	4113	COMMUNICATION OR UTILITY	acre		0.6	2.	2.
4015	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4015	7601	ACTIVE PARK	acre		23.4	1556.	1024.
4015	8002	INTENSIVE AGRICULTURE	acre		1.5	1.	1.
4015		TOTAL				4863.	3039.
4017	101	SINGLE FAMILY	du		100.0	1560.	1089.
4017	102	MULTI-FAMILY	du		288.0	3082.	2163.
4017	103	MOBILE HOME PARK	du		87.0	574.	381.
4017	162	NC MU MULTI-FAMILY	du		79.0	608.	427.
4017	4112	RIGHT-OF-WAY	acre		12.1	0.	0.
4017	5027	NC MU RETAIL	acre		47.6	7124.	5172.
4017	6012	NC MU OFFICE	acre		28.6	682.	523.
4017	9101	INACTIVE USE	acre		0.6	0.	0.
4017	9700	MIXED USE 75% STREETFRONT	acre		2.5	2468.	1792.
4017		TOTAL				16097.	11546.
4027	101	SINGLE FAMILY	du		64.0	998.	697.
4027	162	NC MU MULTI-FAMILY	du		158.0	1217.	854.
4027	4112	RIGHT-OF-WAY	acre		11.2	0.	0.

CVSB(Chula Vista Southbay)- 2030 Base
trip generation and land use by zone

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4027	5027	NC MU RETAIL	acre		81.4	12180.	8842.
4027	6012	NC MU OFFICE	acre		49.0	1166.	894.
4027	6102	CHURCH	acre		2.2	115.	88.
4027	6502	HOSPITAL	acre		10.7	3616.	2660.
4027	6509	OTHER HEALTH CARE	acre		1.4	671.	498.
4027	6809	OTHER SCHOOL	acre		4.4	883.	728.
4027	7607	RESIDENTIAL RECREATION	acre		0.8	0.	0.
4027	9700	MIXED USE 75% STREETFRONT	acre		1.0	983.	714.
4027		TOTAL				21829.	15975.
4029	162	NC MU MULTI-FAMILY	du		7.0	54.	38.
4029	4112	RIGHT-OF-WAY	acre		16.6	0.	0.
4029	5027	NC MU RETAIL	acre		4.5	676.	491.
4029	6012	NC MU OFFICE	acre		2.7	65.	50.
4029	6102	CHURCH	acre		1.4	74.	57.
4029	6701	MILITARY USE	acre		3.8	0.	0.
4029		TOTAL				868.	635.
4030	101	SINGLE FAMILY	du		162.0	2527.	1764.
4030	102	MULTI-FAMILY	du		51.0	546.	383.
4030	4112	RIGHT-OF-WAY	acre		7.3	0.	0.
4030	4113	COMMUNICATION OR UTILITY	acre		0.2	1.	1.
4030		TOTAL				3074.	2147.
4033	101	SINGLE FAMILY	du		11.0	172.	120.
4033	1409	OTHER GROUP QUARTERS	acre		0.6	3.	2.
4033	4112	RIGHT-OF-WAY	acre		4.0	0.	0.
4033	6502	HOSPITAL	acre		17.7	5988.	4404.
4033	6509	OTHER HEALTH CARE	acre		5.0	2428.	1802.
4033		TOTAL				8590.	6327.
4036	101	SINGLE FAMILY	du		81.0	1264.	882.
4036	162	NC MU MULTI-FAMILY	du		64.0	493.	346.
4036	4112	RIGHT-OF-WAY	acre		11.1	0.	0.
4036	5027	NC MU RETAIL	acre		42.3	6326.	4592.
4036	6012	NC MU OFFICE	acre		25.4	605.	464.
4036	9101	INACTIVE USE	acre		0.3	0.	0.
4036		TOTAL				8688.	6284.
4037	101	SINGLE FAMILY	du		65.0	1014.	708.
4037	102	MULTI-FAMILY	du		140.0	1498.	1052.
4037	1409	OTHER GROUP QUARTERS	acre		4.6	22.	16.
4037	4112	RIGHT-OF-WAY	acre		14.9	0.	0.
4037	6102	CHURCH	acre		1.2	64.	49.
4037	6502	HOSPITAL	acre		1.3	452.	332.
4037	6509	OTHER HEALTH CARE	acre		0.6	287.	213.
4037	7607	RESIDENTIAL RECREATION	acre		0.2	0.	0.
4037		TOTAL				3337.	2369.
4040	101	SINGLE FAMILY	du		136.0	2122.	1480.
4040	102	MULTI-FAMILY	du		29.0	310.	218.
4040	162	NC MU MULTI-FAMILY	du		8.0	62.	43.

CVSB(Chula Vista Southbay)- 2030 Base
trip generation and land use by zone

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4040	1409	OTHER GROUP QUARTERS	acre		0.7	3.	2.
4040	4112	RIGHT-OF-WAY	acre		5.7	0.	0.
4040	5027	NC MU RETAIL	acre		9.4	1406.	1021.
4040	6012	NC MU OFFICE	acre		5.7	135.	103.
4040		TOTAL				4037.	2868.
4041	101	SINGLE FAMILY	du		94.0	1466.	1023.
4041	102	MULTI-FAMILY	du		19.0	203.	143.
4041	4112	RIGHT-OF-WAY	acre		7.3	0.	0.
4041		TOTAL				1670.	1166.
4043	101	SINGLE FAMILY	du		112.0	1747.	1219.
4043	102	MULTI-FAMILY	du		567.0	6067.	4259.
4043	162	NC MU MULTI-FAMILY	du		52.0	400.	281.
4043	4112	RIGHT-OF-WAY	acre		7.9	0.	0.
4043	5027	NC MU RETAIL	acre		31.5	4717.	3424.
4043	6012	NC MU OFFICE	acre		19.0	452.	347.
4043	9101	INACTIVE USE	acre		1.0	0.	0.
4043		TOTAL				13383.	9530.
4048	101	SINGLE FAMILY	du		109.0	1700.	1187.
4048	102	MULTI-FAMILY	du		25.0	267.	188.
4048	4112	RIGHT-OF-WAY	acre		6.3	0.	0.
4048		TOTAL				1968.	1374.
4049	162	NC MU MULTI-FAMILY	du		31.0	239.	168.
4049	4112	RIGHT-OF-WAY	acre		3.6	0.	0.
4049	5027	NC MU RETAIL	acre		33.0	4944.	3589.
4049	6012	NC MU OFFICE	acre		19.9	473.	363.
4049		TOTAL				5656.	4120.
4053	102	MULTI-FAMILY	du		250.0	2675.	1878.
4053	162	NC MU MULTI-FAMILY	du		78.0	601.	422.
4053	1409	OTHER GROUP QUARTERS	acre		2.6	12.	9.
4053	4112	RIGHT-OF-WAY	acre		4.4	0.	0.
4053	5027	NC MU RETAIL	acre		41.8	6259.	4544.
4053	6012	NC MU OFFICE	acre		25.2	599.	459.
4053	6102	CHURCH	acre		0.7	36.	28.
4053	6509	OTHER HEALTH CARE	acre		2.0	970.	719.
4053		TOTAL				11152.	8059.
4056	101	SINGLE FAMILY	du		3.0	47.	33.
4056	109	MULTI-FAMILY	du		700.0	6090.	4276.
4056	5014	SPECIALTY COMMERCIAL NC	acre		200.0	12480.	8830.
4056	6008	LOW RISE OFFICE NC	acre		200.0	5220.	4001.
4056		TOTAL				23837.	17139.
4060	4112	RIGHT-OF-WAY	acre		33.7	0.	0.
4060	6701	MILITARY USE	acre		109.8	0.	0.
4060		TOTAL				0.	0.
4062	101	SINGLE FAMILY	du		160.0	2496.	1742.

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Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
4062	4112	RIGHT-OF-WAY	acre		8.5	0.	0.
4062	9101	INACTIVE USE	acre		0.3	0.	0.
4062		TOTAL				2496.	1742.
4063	101	SINGLE FAMILY	du		111.0	1732.	1208.
4063	102	MULTI-FAMILY	du		157.0	1680.	1179.
4063	162	NC MU MULTI-FAMILY	du		31.0	239.	168.
4063	4112	RIGHT-OF-WAY	acre		9.8	0.	0.
4063	5027	NC MU RETAIL	acre		52.2	7806.	5667.
4063	6012	NC MU OFFICE	acre		31.4	747.	573.
4063	6102	CHURCH	acre		2.0	107.	82.
4063	6509	OTHER HEALTH CARE	acre		0.2	112.	83.
4063		TOTAL				12422.	8960.
4065	101	SINGLE FAMILY	du		188.0	2933.	2047.
4065	162	NC MU MULTI-FAMILY	du		23.0	177.	124.
4065	4112	RIGHT-OF-WAY	acre		11.6	0.	0.
4065	4114	PARKING	acre		0.3	0.	0.
4065	5027	NC MU RETAIL	acre		12.6	1887.	1370.
4065	6012	NC MU OFFICE	acre		7.6	181.	138.
4065	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4065	6809	OTHER SCHOOL	acre		0.1	9.	8.
4065	9101	INACTIVE USE	acre		0.4	0.	0.
4065		TOTAL				7305.	4872.
4066	101	SINGLE FAMILY	du		69.0	1076.	751.
4066	102	MULTI-FAMILY	du		114.0	1220.	856.
4066	162	NC MU MULTI-FAMILY	du		12.0	92.	65.
4066	4112	RIGHT-OF-WAY	acre		19.9	0.	0.
4066	4114	PARKING	acre		0.3	0.	0.
4066	5027	NC MU RETAIL	acre		14.8	2216.	1609.
4066	6012	NC MU OFFICE	acre		8.9	212.	163.
4066	6102	CHURCH	acre		0.4	21.	16.
4066		TOTAL				4838.	3460.
4069	4112	RIGHT-OF-WAY	acre		8.0	0.	0.
4069	6701	MILITARY USE	acre		208.7	0.	0.
4069	9101	INACTIVE USE	acre		138.4	0.	0.
4069		TOTAL				0.	0.
4071	101	SINGLE FAMILY	du		10.0	156.	109.
4071	162	NC MU MULTI-FAMILY	du		54.0	416.	292.
4071	4112	RIGHT-OF-WAY	acre		8.5	0.	0.
4071	5027	NC MU RETAIL	acre		37.2	5557.	4034.
4071	6012	NC MU OFFICE	acre		22.4	532.	408.
4071		TOTAL				6661.	4843.
4072	162	NC MU MULTI-FAMILY	du		22.0	169.	119.
4072	4112	RIGHT-OF-WAY	acre		5.1	0.	0.
4072	5027	NC MU RETAIL	acre		32.5	4856.	3526.
4072	6012	NC MU OFFICE	acre		19.5	465.	356.
4072		TOTAL				5491.	4001.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4074	101	SINGLE FAMILY	du		34.0	530.	370.
4074	102	MULTI-FAMILY	du		8.0	86.	60.
4074	162	NC MU MULTI-FAMILY	du		28.0	216.	151.
4074	4112	RIGHT-OF-WAY	acre		9.4	0.	0.
4074	4114	PARKING	acre		0.4	0.	0.
4074	5027	NC MU RETAIL	acre		29.7	4439.	3223.
4074	6012	NC MU OFFICE	acre		17.9	425.	326.
4074		TOTAL				5695.	4130.
4075	109	MULTI-FAMILY	du		700.0	6090.	4276.
4075	5014	SPECIALTY COMMERCIAL NC	acre		200.0	12480.	8830.
4075	6008	LOW RISE OFFICE NC	acre		200.0	5220.	4001.
4075		TOTAL				23790.	17107.
4076	101	SINGLE FAMILY	du		3.0	47.	33.
4076	102	MULTI-FAMILY	du		106.0	1134.	796.
4076	162	NC MU MULTI-FAMILY	du		107.0	824.	578.
4076	4112	RIGHT-OF-WAY	acre		2.6	0.	0.
4076	5027	NC MU RETAIL	acre		54.2	8103.	5882.
4076	6012	NC MU OFFICE	acre		32.6	775.	594.
4076		TOTAL				10883.	7884.
4077	101	SINGLE FAMILY	du		3.0	47.	33.
4077	102	MULTI-FAMILY	du		56.0	599.	421.
4077	162	NC MU MULTI-FAMILY	du		68.0	524.	368.
4077	4112	RIGHT-OF-WAY	acre		4.1	0.	0.
4077	5027	NC MU RETAIL	acre		46.8	7007.	5087.
4077	6012	NC MU OFFICE	acre		28.2	671.	514.
4077		TOTAL				8848.	6422.
4080	109	MULTI-FAMILY	du		1000.0	8700.	6108.
4080	5014	SPECIALTY COMMERCIAL NC	acre		200.0	12480.	8830.
4080	6008	LOW RISE OFFICE NC	acre		70.0	1827.	1400.
4080		TOTAL				23007.	16338.
4081	101	SINGLE FAMILY	du		152.0	2371.	1655.
4081	162	NC MU MULTI-FAMILY	du		5.0	38.	27.
4081	4112	RIGHT-OF-WAY	acre		13.2	0.	0.
4081	5027	NC MU RETAIL	acre		21.0	3148.	2285.
4081	6012	NC MU OFFICE	acre		12.7	301.	231.
4081	9101	INACTIVE USE	acre		0.6	0.	0.
4081		TOTAL				5859.	4198.
4082	101	SINGLE FAMILY	du		269.0	4196.	2928.
4082	102	MULTI-FAMILY	du		62.0	663.	466.
4082	162	NC MU MULTI-FAMILY	du		74.0	570.	400.
4082	4112	RIGHT-OF-WAY	acre		17.2	0.	0.
4082	4113	COMMUNICATION OR UTILITY	acre		0.3	1.	1.
4082	5007	STREETFRONT COMMERCIAL	acre		0.5	682.	495.
4082	5027	NC MU RETAIL	acre		114.5	17128.	12434.
4082	6012	NC MU OFFICE	acre		68.9	1639.	1257.
4082		TOTAL				24880.	17981.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4084	162	NC MU MULTI-FAMILY	du		65.0	500.	351.
4084	4112	RIGHT-OF-WAY	acre		12.8	0.	0.
4084	5027	NC MU RETAIL	acre		44.2	6608.	4798.
4084	6012	NC MU OFFICE	acre		26.6	633.	485.
4084		TOTAL				7741.	5634.
4086	162	NC MU MULTI-FAMILY	du		151.0	1163.	816.
4086	4112	RIGHT-OF-WAY	acre		4.1	0.	0.
4086	5027	NC MU RETAIL	acre		80.9	12102.	8785.
4086	6012	NC MU OFFICE	acre		48.7	1158.	888.
4086	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4086	9101	INACTIVE USE	acre		0.0	0.	0.
4086		TOTAL				16541.	11674.
4087	162	NC MU MULTI-FAMILY	du		161.0	1240.	870.
4087	4112	RIGHT-OF-WAY	acre		5.7	0.	0.
4087	5027	NC MU RETAIL	acre		82.5	12342.	8960.
4087	6012	NC MU OFFICE	acre		49.6	1181.	905.
4087		TOTAL				14763.	10735.
4092	101	SINGLE FAMILY	du		88.0	1373.	958.
4092	162	NC MU MULTI-FAMILY	du		6.0	46.	32.
4092	4112	RIGHT-OF-WAY	acre		6.0	0.	0.
4092	5027	NC MU RETAIL	acre		3.7	554.	402.
4092	6012	NC MU OFFICE	acre		2.2	53.	41.
4092	6807	SCHOOL DISTRICT OFFICE	acre		3.8	964.	739.
4092		TOTAL				2990.	2172.
4093	4112	RIGHT-OF-WAY	acre		2.4	0.	0.
4093	6003	GOV'T OFFICE OR CENTER	acre		6.1	6433.	4830.
4093	6103	LIBRARY	acre		3.5	1531.	1038.
4093	7601	ACTIVE PARK	acre		46.2	3073.	2023.
4093		TOTAL				11037.	7890.
4094	109	MULTI-FAMILY	du		1000.0	8700.	6108.
4094	5014	SPECIALTY COMMERCIAL NC	acre		200.0	12480.	8830.
4094	6003	GOV'T OFFICE OR CENTER	acre		1.2	1248.	937.
4094	6008	LOW RISE OFFICE NC	acre		70.0	1827.	1400.
4094	6809	OTHER SCHOOL	acre		1.9	373.	308.
4094		TOTAL				24628.	17583.
4095	101	SINGLE FAMILY	du		55.0	858.	599.
4095	102	MULTI-FAMILY	du		258.0	2761.	1938.
4095	162	NC MU MULTI-FAMILY	du		16.0	123.	86.
4095	4112	RIGHT-OF-WAY	acre		7.6	0.	0.
4095	5027	NC MU RETAIL	acre		10.8	1613.	1171.
4095	6012	NC MU OFFICE	acre		6.5	154.	118.
4095	6102	CHURCH	acre		1.7	91.	70.
4095	7601	ACTIVE PARK	acre		0.2	12.	8.
4095		TOTAL				5612.	3991.
4097	101	SINGLE FAMILY	du		196.0	3058.	2134.

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Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
4097	102	MULTI-FAMILY	du		298.0	3189.	2239.
4097	162	NC MU MULTI-FAMILY	du		1.0	8.	5.
4097	4112	RIGHT-OF-WAY	acre		18.1	0.	0.
4097	5027	NC MU RETAIL	acre		15.0	2239.	1626.
4097	6012	NC MU OFFICE	acre		9.0	214.	164.
4097	6102	CHURCH	acre		0.9	50.	38.
4097		TOTAL				8757.	6206.
4098	101	SINGLE FAMILY	du		27.0	421.	294.
4098	109	MULTI-FAMILY	du		317.0	2758.	1936.
4098	4113	COMMUNICATION OR UTILITY	acre		2.0	8.	6.
4098	5014	SPECIALTY COMMERCIAL NC	acre		63.4	3956.	2799.
4098	6008	LOW RISE OFFICE NC	acre		126.8	3309.	2537.
4098		TOTAL				10453.	7572.
4101	101	SINGLE FAMILY	du		130.0	2028.	1415.
4101	4112	RIGHT-OF-WAY	acre		9.0	0.	0.
4101	6102	CHURCH	acre		0.6	35.	27.
4101	6805	JUNIOR HIGH OR MIDDLE SCHOOL	acre		1.0	4206.	2586.
4101		TOTAL				6268.	4028.
4102	101	SINGLE FAMILY	du		94.0	1466.	1023.
4102	109	MULTI-FAMILY	du		218.0	1897.	1332.
4102	2103	LIGHT INDUSTRY	acre		2.2	220.	178.
4102	5014	SPECIALTY COMMERCIAL NC	acre		49.8	3108.	2199.
4102	6008	LOW RISE OFFICE NC	acre		124.3	3244.	2487.
4102		TOTAL				9935.	7218.
4103	2103	LIGHT INDUSTRY	acre		9.2	923.	746.
4103	4112	RIGHT-OF-WAY	acre		12.1	0.	0.
4103	5007	STREETFRONT COMMERCIAL	acre		0.2	250.	181.
4103	9700	MIXED USE 75% STREETFRONT	acre		0.1	109.	79.
4103		TOTAL				1281.	1006.
4104	101	SINGLE FAMILY	du		6.0	94.	65.
4104	102	MULTI-FAMILY	du		48.0	514.	361.
4104	162	NC MU MULTI-FAMILY	du		17.0	131.	92.
4104	4112	RIGHT-OF-WAY	acre		5.3	0.	0.
4104	5027	NC MU RETAIL	acre		35.0	5238.	3803.
4104	6012	NC MU OFFICE	acre		21.1	501.	384.
4104		TOTAL				6478.	4705.
4107	101	SINGLE FAMILY	du		189.0	2948.	2057.
4107	102	MULTI-FAMILY	du		47.0	503.	353.
4107	4112	RIGHT-OF-WAY	acre		17.7	0.	0.
4107	5027	NC MU RETAIL	acre		13.0	1940.	1408.
4107	6012	NC MU OFFICE	acre		7.8	186.	142.
4107		TOTAL				5577.	3961.
4108	101	SINGLE FAMILY	du		20.0	312.	218.
4108	109	MULTI-FAMILY	du		110.0	957.	672.
4108	2103	LIGHT INDUSTRY	acre		0.2	20.	16.

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Zone	Code	Name	Type	Amount	-----Trips-----	
					Person	Vehicle
4108	5014	SPECIALTY COMMERCIAL NC	acre	118.2	7376.	5219.
4108	6008	LOW RISE OFFICE NC	acre	237.9	6209.	4759.
4108		TOTAL			14874.	10884.
4109	4112	RIGHT-OF-WAY	acre	0.8	0.	0.
4109		TOTAL			0.	0.
4110	162	NC MU MULTI-FAMILY	du	6.0	46.	32.
4110	5027	NC MU RETAIL	acre	5.2	776.	563.
4110	6012	NC MU OFFICE	acre	3.1	74.	57.
4110	9101	INACTIVE USE	acre	0.0	0.	0.
4110		TOTAL			896.	653.
4114	101	SINGLE FAMILY	du	55.0	858.	599.
4114	102	MULTI-FAMILY	du	73.0	781.	548.
4114	4112	RIGHT-OF-WAY	acre	7.8	0.	0.
4114	6805	JUNIOR HIGH OR MIDDLE SCHOOL	acre	1.0	4206.	2586.
4114	6806	ELEMENTARY SCHOOL	acre	1.0	2119.	1185.
4114	9101	INACTIVE USE	acre	1.5	0.	0.
4114		TOTAL			7963.	4918.
4117	109	MULTI-FAMILY	du	600.0	5220.	3665.
4117	5014	SPECIALTY COMMERCIAL NC	acre	200.0	12480.	8830.
4117	6008	LOW RISE OFFICE NC	acre	40.0	1044.	800.
4117	6103	LIBRARY	acre	10.5	4591.	3113.
4117		TOTAL			23335.	16408.
4118	4112	RIGHT-OF-WAY	acre	1.0	0.	0.
4118		TOTAL			0.	0.
4119	4112	RIGHT-OF-WAY	acre	14.9	0.	0.
4119	6105	FIRE OR POLICE STATION	acre	4.2	1296.	956.
4119	9700	MIXED USE 75% STREETFRONT	acre	9.2	8931.	6484.
4119		TOTAL			10227.	7439.
4121	2001	HEAVY INDUSTRY	acre	7.7	601.	497.
4121	2101	INDUSTRIAL PARK	acre	0.3	50.	41.
4121	2103	LIGHT INDUSTRY	acre	12.0	1199.	969.
4121	4112	RIGHT-OF-WAY	acre	26.6	0.	0.
4121	9700	MIXED USE 75% STREETFRONT	acre	1.1	1085.	788.
4121		TOTAL			2934.	2294.
4124	101	SINGLE FAMILY	du	123.0	1919.	1339.
4124	102	MULTI-FAMILY	du	116.0	1241.	871.
4124	4112	RIGHT-OF-WAY	acre	9.3	0.	0.
4124	5009	OTHER COMMERCIAL	acre	0.5	59.	43.
4124		TOTAL			3219.	2253.
4125	102	MULTI-FAMILY	du	15.0	160.	113.
4125	162	NC MU MULTI-FAMILY	du	13.0	100.	70.
4125	4112	RIGHT-OF-WAY	acre	6.8	0.	0.
4125	5027	NC MU RETAIL	acre	35.2	5260.	3818.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4125	6012	NC MU OFFICE	acre		21.1	503.	386.
4125		TOTAL				6024.	4387.
4126	2001	HEAVY INDUSTRY	acre		38.8	3017.	2495.
4126	2101	INDUSTRIAL PARK	acre		5.1	980.	803.
4126	2103	LIGHT INDUSTRY	acre		32.3	3235.	2615.
4126	2104	WAREHOUSING OR STORAGE	acre		8.5	282.	231.
4126	4112	RIGHT-OF-WAY	acre		19.7	0.	0.
4126	6701	MILITARY USE	acre		0.5	0.	0.
4126		TOTAL				7515.	6144.
4128	1503	RESORT	acre		4.0	632.	389.
4128	2103	LIGHT INDUSTRY	acre		13.0	1302.	1053.
4128	2104	WAREHOUSING OR STORAGE	acre		97.2	3219.	2631.
4128	4112	RIGHT-OF-WAY	acre		23.5	0.	0.
4128	4114	PARKING	acre		2.3	0.	0.
4128	4120	MARINE TERMINAL	acre		82.4	1170.	968.
4128	7601	ACTIVE PARK	acre		3.4	224.	148.
4128	9101	INACTIVE USE	acre		675.8	0.	0.
4128		TOTAL				6548.	5188.
4129	101	SINGLE FAMILY	du		182.0	2839.	1981.
4129	102	MULTI-FAMILY	du		21.0	225.	158.
4129	4112	RIGHT-OF-WAY	acre		12.1	0.	0.
4129	6102	CHURCH	acre		0.5	29.	22.
4129		TOTAL				3093.	2161.
4130	101	SINGLE FAMILY	du		32.0	499.	348.
4130	102	MULTI-FAMILY	du		628.0	6720.	4718.
4130	4112	RIGHT-OF-WAY	acre		8.3	0.	0.
4130	6109	OTHER PUBLIC SERVICE	acre		0.4	156.	113.
4130		TOTAL				7375.	5179.
4132	4112	RIGHT-OF-WAY	acre		11.9	0.	0.
4132	5006	AUTO COMMERCIAL	acre		23.4	11028.	7803.
4132	5007	STREETFRONT COMMERCIAL	acre		0.4	631.	458.
4132	5009	OTHER COMMERCIAL	acre		0.2	23.	17.
4132	6509	OTHER HEALTH CARE	acre		1.0	485.	360.
4132	9700	MIXED USE 75% STREETFRONT	acre		0.6	611.	444.
4132		TOTAL				12778.	9081.
4134	109	MULTI-FAMILY	du		367.0	3193.	2242.
4134	5014	SPECIALTY COMMERCIAL NC	acre		254.0	15850.	11214.
4134	6008	LOW RISE OFFICE NC	acre		368.6	9620.	7374.
4134	6806	ELEMENTARY SCHOOL	acre		2.0	4237.	2370.
4134	7601	ACTIVE PARK	acre		33.6	2240.	1474.
4134		TOTAL				35140.	24674.
4136	101	SINGLE FAMILY	du		156.0	2434.	1698.
4136		TOTAL				2434.	1698.
4139	101	SINGLE FAMILY	du		17.0	265.	185.

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Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
4139	102	MULTI-FAMILY	du		184.0	1969.	1382.
4139	4112	RIGHT-OF-WAY	acre		2.4	0.	0.
4139		TOTAL				2234.	1567.
4144	101	SINGLE FAMILY	du		33.0	515.	359.
4144	4112	RIGHT-OF-WAY	acre		1.0	0.	0.
4144		TOTAL				515.	359.
4145	162	NC MU MULTI-FAMILY	du		8.0	62.	43.
4145	2103	LIGHT INDUSTRY	acre		18.8	1886.	1524.
4145	4112	RIGHT-OF-WAY	acre		14.0	0.	0.
4145	5027	NC MU RETAIL	acre		4.3	643.	467.
4145	6012	NC MU OFFICE	acre		2.6	62.	47.
4145		TOTAL				2652.	2081.
4147	101	SINGLE FAMILY	du		13.0	203.	142.
4147	102	MULTI-FAMILY	du		14.0	150.	105.
4147	162	NC MU MULTI-FAMILY	du		45.0	346.	243.
4147	1409	OTHER GROUP QUARTERS	acre		1.1	5.	4.
4147	4112	RIGHT-OF-WAY	acre		1.8	0.	0.
4147	5027	NC MU RETAIL	acre		37.7	5639.	4093.
4147	6012	NC MU OFFICE	acre		22.7	540.	414.
4147		TOTAL				6882.	5001.
4148	101	SINGLE FAMILY	du		71.0	1108.	773.
4148	102	MULTI-FAMILY	du		142.0	1519.	1067.
4148	162	NC MU MULTI-FAMILY	du		20.0	154.	108.
4148	4112	RIGHT-OF-WAY	acre		13.5	0.	0.
4148	5027	NC MU RETAIL	acre		18.0	2697.	1958.
4148	6012	NC MU OFFICE	acre		10.9	258.	198.
4148	6804	SENIOR HIGH SCHOOL	acre		1.0	5369.	2423.
4148	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4148	9101	INACTIVE USE	acre		0.0	0.	0.
4148		TOTAL				13224.	7711.
4149	101	SINGLE FAMILY	du		613.0	9563.	6673.
4149	4112	RIGHT-OF-WAY	acre		63.9	0.	0.
4149	6102	CHURCH	acre		2.1	112.	86.
4149	7601	ACTIVE PARK	acre		2.2	150.	98.
4149	9101	INACTIVE USE	acre		0.9	0.	0.
4149		TOTAL				9825.	6858.
4150	109	MULTI-FAMILY	du		358.0	3115.	2187.
4150	5014	SPECIALTY COMMERCIAL NC	acre		194.8	12156.	8600.
4150	6008	LOW RISE OFFICE NC	acre		246.1	6423.	4923.
4150	6809	OTHER SCHOOL	acre		1.7	333.	275.
4150		TOTAL				22027.	15985.
4151	101	SINGLE FAMILY	du		91.0	1420.	991.
4151	102	MULTI-FAMILY	du		295.0	3156.	2216.
4151	162	NC MU MULTI-FAMILY	du		26.0	200.	141.
4151	2101	INDUSTRIAL PARK	acre		1.2	236.	194.

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Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
4151	4112	RIGHT-OF-WAY	acre		11.1	0.	0.
4151	5006	AUTO COMMERCIAL	acre		3.2	1524.	1078.
4151	5027	NC MU RETAIL	acre		23.7	3547.	2575.
4151	6012	NC MU OFFICE	acre		14.3	339.	260.
4151	9101	INACTIVE USE	acre		0.0	0.	0.
4151		TOTAL				10423.	7454.
4153	101	SINGLE FAMILY	du		5.0	78.	54.
4153	162	NC MU MULTI-FAMILY	du		171.0	1317.	924.
4153	4112	RIGHT-OF-WAY	acre		8.8	0.	0.
4153	5027	NC MU RETAIL	acre		98.3	14709.	10679.
4153	6012	NC MU OFFICE	acre		59.2	1408.	1079.
4153	9101	INACTIVE USE	acre		16.0	0.	0.
4153		TOTAL				17512.	12737.
4155	4112	RIGHT-OF-WAY	acre		10.9	0.	0.
4155	5006	AUTO COMMERCIAL	acre		21.2	10009.	7082.
4155	5007	STREETFRONT COMMERCIAL	acre		0.3	393.	286.
4155	9700	MIXED USE 75% STREETFRONT	acre		0.6	587.	426.
4155		TOTAL				10989.	7793.
4164	2101	INDUSTRIAL PARK	acre		31.1	5975.	4898.
4164	2104	WAREHOUSING OR STORAGE	acre		1.9	63.	52.
4164	4112	RIGHT-OF-WAY	acre		37.8	0.	0.
4164	9101	INACTIVE USE	acre		5.8	0.	0.
4164		TOTAL				6038.	4950.
4166	162	NC MU MULTI-FAMILY	du		642.0	4943.	3471.
4166	4112	RIGHT-OF-WAY	acre		40.5	0.	0.
4166	5027	NC MU RETAIL	acre		301.5	45108.	32747.
4166	6012	NC MU OFFICE	acre		181.4	4317.	3309.
4166	9101	INACTIVE USE	acre		53.7	0.	0.
4166		TOTAL				54369.	39527.
4168	1501	LOW-RISE HOTEL OR MOTEL	acre		5.9	2004.	1235.
4168	1503	RESORT	acre		24.0	3837.	2365.
4168	2103	LIGHT INDUSTRY	acre		41.6	4168.	3369.
4168	4112	RIGHT-OF-WAY	acre		9.9	0.	0.
4168	5014	SPECIALTY COMMERCIAL NC	acre		50.0	3120.	2207.
4168	9101	INACTIVE USE	acre		26.7	0.	0.
4168		TOTAL				13129.	9177.
4170	162	NC MU MULTI-FAMILY	du		63.0	485.	341.
4170	4112	RIGHT-OF-WAY	acre		17.9	0.	0.
4170	4113	COMMUNICATION OR UTILITY	acre		2.5	10.	8.
4170	5027	NC MU RETAIL	acre		48.4	7241.	5257.
4170	6012	NC MU OFFICE	acre		29.1	693.	531.
4170		TOTAL				8429.	6136.
4179	162	NC MU MULTI-FAMILY	du		45.0	346.	243.
4179	4112	RIGHT-OF-WAY	acre		2.9	0.	0.
4179	5006	AUTO COMMERCIAL	acre		4.4	2059.	1457.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4179	5009	OTHER COMMERCIAL	acre		4.7	602.	437.
4179	5027	NC MU RETAIL	acre		42.4	6344.	4606.
4179	6012	NC MU OFFICE	acre		25.5	607.	465.
4179		TOTAL				9959.	7209.
4188	2101	INDUSTRIAL PARK	acre		13.6	2618.	2146.
4188	2104	WAREHOUSING OR STORAGE	acre		0.9	30.	24.
4188	4112	RIGHT-OF-WAY	acre		54.9	0.	0.
4188	4114	PARKING	acre		5.1	0.	0.
4188	5007	STREETFRONT COMMERCIAL	acre		0.8	1161.	842.
4188	9101	INACTIVE USE	acre		33.1	0.	0.
4188		TOTAL				3808.	3013.
4191	4112	RIGHT-OF-WAY	acre		6.3	0.	0.
4191	5014	SPECIALTY COMMERCIAL NC	acre		50.0	3120.	2207.
4191	7207	MARINA	acre		20.2	1129.	771.
4191	9101	INACTIVE USE	acre		20.2	0.	0.
4191		TOTAL				4249.	2978.
4281	9101	INACTIVE USE	acre		199.2	0.	0.
4281		TOTAL				0.	0.
4606	2201	EXTRACTIVE INDUSTRY	acre		213.8	321.	265.
4606		TOTAL				321.	265.
4615	101	SINGLE FAMILY	du		96.0	1498.	1045.
4615	102	MULTI-FAMILY	du		28.0	300.	210.
4615	4112	RIGHT-OF-WAY	acre		6.0	0.	0.
4615	9101	INACTIVE USE	acre		0.0	0.	0.
4615		TOTAL				1797.	1255.
4616	101	SINGLE FAMILY	du		87.0	1357.	947.
4616	102	MULTI-FAMILY	du		20.0	214.	150.
4616	4112	RIGHT-OF-WAY	acre		6.2	0.	0.
4616		TOTAL				1571.	1097.
4617	101	SINGLE FAMILY	du		1.0	16.	11.
4617	4112	RIGHT-OF-WAY	acre		1.8	0.	0.
4617	5027	NC MU RETAIL	acre		10.1	1515.	1100.
4617	6012	NC MU OFFICE	acre		6.1	145.	111.
4617		TOTAL				1675.	1222.
4618	101	SINGLE FAMILY	du		158.0	2465.	1720.
4618	102	MULTI-FAMILY	du		178.0	1905.	1337.
4618	162	NC MU MULTI-FAMILY	du		6.0	46.	32.
4618	4112	RIGHT-OF-WAY	acre		13.1	0.	0.
4618	5027	NC MU RETAIL	acre		9.8	1461.	1061.
4618	6012	NC MU OFFICE	acre		5.9	140.	107.
4618		TOTAL				6017.	4257.
4619	101	SINGLE FAMILY	du		125.0	1950.	1361.
4619	102	MULTI-FAMILY	du		50.0	535.	376.

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Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
4619	4112	RIGHT-OF-WAY	acre		5.2	0.	0.
4619		TOTAL				2485.	1736.
4620	101	SINGLE FAMILY	du		104.0	1622.	1132.
4620	102	MULTI-FAMILY	du		32.0	342.	240.
4620	4112	RIGHT-OF-WAY	acre		7.4	0.	0.
4620	6102	CHURCH	acre		0.2	11.	8.
4620		TOTAL				1976.	1381.
4621	101	SINGLE FAMILY	du		175.0	2730.	1905.
4621	102	MULTI-FAMILY	du		184.0	1969.	1382.
4621	4112	RIGHT-OF-WAY	acre		9.2	0.	0.
4621		TOTAL				4699.	3287.
4622	101	SINGLE FAMILY	du		64.0	998.	697.
4622	102	MULTI-FAMILY	du		42.0	449.	316.
4622	162	NC MU MULTI-FAMILY	du		1.0	8.	5.
4622	4112	RIGHT-OF-WAY	acre		6.9	0.	0.
4622	5027	NC MU RETAIL	acre		15.0	2244.	1629.
4622	6012	NC MU OFFICE	acre		9.0	215.	165.
4622		TOTAL				3914.	2811.
4623	101	SINGLE FAMILY	du		5.0	78.	54.
4623	102	MULTI-FAMILY	du		229.0	2450.	1720.
4623	162	NC MU MULTI-FAMILY	du		17.0	131.	92.
4623	4112	RIGHT-OF-WAY	acre		12.4	0.	0.
4623	5027	NC MU RETAIL	acre		20.6	3082.	2238.
4623	6012	NC MU OFFICE	acre		12.4	295.	226.
4623		TOTAL				6036.	4330.
4624	109	MULTI-FAMILY	du		27.0	235.	165.
4624	5014	SPECIALTY COMMERCIAL NC	acre		29.5	1841.	1302.
4624	6008	LOW RISE OFFICE NC	acre		59.5	1553.	1190.
4624		TOTAL				3629.	2658.
4625	2103	LIGHT INDUSTRY	acre		5.6	557.	450.
4625	4112	RIGHT-OF-WAY	acre		19.6	0.	0.
4625	6003	GOV'T OFFICE OR CENTER	acre		4.4	4707.	3534.
4625	6809	OTHER SCHOOL	acre		1.7	347.	286.
4625	9700	MIXED USE 75% STREETFRONT	acre		8.7	8470.	6149.
4625		TOTAL				14080.	10419.
4626	101	SINGLE FAMILY	du		51.0	796.	555.
4626	102	MULTI-FAMILY	du		64.0	685.	481.
4626	162	NC MU MULTI-FAMILY	du		1.0	8.	5.
4626	4112	RIGHT-OF-WAY	acre		9.1	0.	0.
4626	4114	PARKING	acre		0.2	0.	0.
4626	5027	NC MU RETAIL	acre		3.6	542.	393.
4626	6012	NC MU OFFICE	acre		2.2	52.	40.
4626	6102	CHURCH	acre		0.1	6.	5.
4626	6109	OTHER PUBLIC SERVICE	acre		0.9	365.	264.
4626	6509	OTHER HEALTH CARE	acre		0.5	231.	171.

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Zone	Code	Name	Type	Amount	-----Trips-----	
					Person	Vehicle
4626	7601	ACTIVE PARK	acre	0.3	23.	15.
4626		TOTAL			2707.	1930.
4627	101	SINGLE FAMILY	du	18.0	281.	196.
4627	102	MULTI-FAMILY	du	123.0	1316.	924.
4627	162	NC MU MULTI-FAMILY	du	2.0	15.	11.
4627	4112	RIGHT-OF-WAY	acre	4.0	0.	0.
4627	5027	NC MU RETAIL	acre	1.9	284.	206.
4627	6012	NC MU OFFICE	acre	1.1	27.	21.
4627	6109	OTHER PUBLIC SERVICE	acre	0.4	156.	113.
4627		TOTAL			2080.	1471.
4628	101	SINGLE FAMILY	du	11.0	172.	120.
4628	102	MULTI-FAMILY	du	375.0	4012.	2817.
4628	4112	RIGHT-OF-WAY	acre	4.7	0.	0.
4628	6109	OTHER PUBLIC SERVICE	acre	1.7	676.	489.
4628		TOTAL			4860.	3425.
4629	2103	LIGHT INDUSTRY	acre	4.1	410.	332.
4629	4112	RIGHT-OF-WAY	acre	3.9	0.	0.
4629	9700	MIXED USE 75% STREETFRONT	acre	0.1	130.	95.
4629		TOTAL			541.	426.
4630	109	MULTI-FAMILY	du	245.0	2131.	1496.
4630	5014	SPECIALTY COMMERCIAL NC	acre	169.3	10564.	7475.
4630	6008	LOW RISE OFFICE NC	acre	245.8	6415.	4917.
4630		TOTAL			19111.	13888.
4631	101	SINGLE FAMILY	du	101.0	1576.	1099.
4631	102	MULTI-FAMILY	du	475.0	5082.	3568.
4631	4112	RIGHT-OF-WAY	acre	13.1	0.	0.
4631	9101	INACTIVE USE	acre	0.1	0.	0.
4631		TOTAL			6658.	4668.
4632	101	SINGLE FAMILY	du	195.0	3042.	2123.
4632	102	MULTI-FAMILY	du	240.0	2568.	1803.
4632	162	NC MU MULTI-FAMILY	du	10.0	77.	54.
4632	4112	RIGHT-OF-WAY	acre	13.3	0.	0.
4632	5027	NC MU RETAIL	acre	25.3	3791.	2752.
4632	6012	NC MU OFFICE	acre	15.2	363.	278.
4632		TOTAL			9841.	7010.
4633	162	NC MU MULTI-FAMILY	du	2.0	15.	11.
4633	2103	LIGHT INDUSTRY	acre	0.9	89.	72.
4633	4112	RIGHT-OF-WAY	acre	1.2	0.	0.
4633	5027	NC MU RETAIL	acre	2.8	415.	301.
4633	6012	NC MU OFFICE	acre	1.7	40.	30.
4633		TOTAL			558.	414.
4634	1501	LOW-RISE HOTEL OR MOTEL	acre	6.0	2038.	1256.
4634	4112	RIGHT-OF-WAY	acre	1.5	0.	0.
4634	5014	SPECIALTY COMMERCIAL NC	acre	16.0	998.	706.
4634		TOTAL			3036.	1963.

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Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
4635	162	NC MU MULTI-FAMILY	du		70.0	539.	378.
4635	4112	RIGHT-OF-WAY	acre		1.8	0.	0.
4635	5027	NC MU RETAIL	acre		37.9	5668.	4115.
4635	6012	NC MU OFFICE	acre		22.8	543.	416.
4635	9101	INACTIVE USE	acre		2.3	0.	0.
4635		TOTAL				6750.	4909.
4636	2101	INDUSTRIAL PARK	acre		17.6	3381.	2772.
4636	4112	RIGHT-OF-WAY	acre		4.0	0.	0.
4636		TOTAL				3381.	2772.
4637	101	SINGLE FAMILY	du		114.0	1778.	1241.
4637	4112	RIGHT-OF-WAY	acre		8.8	0.	0.
4637	7601	ACTIVE PARK	acre		7.6	507.	333.
4637		TOTAL				2285.	1574.
4638	101	SINGLE FAMILY	du		37.0	577.	403.
4638	102	MULTI-FAMILY	du		141.0	1509.	1059.
4638	162	NC MU MULTI-FAMILY	du		2.0	15.	11.
4638	4112	RIGHT-OF-WAY	acre		16.3	0.	0.
4638	5027	NC MU RETAIL	acre		1.4	204.	148.
4638	6012	NC MU OFFICE	acre		0.8	20.	15.
4638	7601	ACTIVE PARK	acre		62.8	4179.	2750.
4638		TOTAL				6504.	4386.
4639	2101	INDUSTRIAL PARK	acre		6.4	1236.	1014.
4639	2103	LIGHT INDUSTRY	acre		0.4	38.	31.
4639	2104	WAREHOUSING OR STORAGE	acre		7.6	252.	206.
4639	4112	RIGHT-OF-WAY	acre		8.5	0.	0.
4639	5006	AUTO COMMERCIAL	acre		9.1	4320.	3057.
4639		TOTAL				5846.	4306.
4640	162	NC MU MULTI-FAMILY	du		82.0	631.	443.
4640	4112	RIGHT-OF-WAY	acre		3.9	0.	0.
4640	5027	NC MU RETAIL	acre		59.2	8853.	6427.
4640	6012	NC MU OFFICE	acre		35.6	847.	649.
4640		TOTAL				10332.	7520.
4641	162	NC MU MULTI-FAMILY	du		115.0	885.	622.
4641	4112	RIGHT-OF-WAY	acre		3.0	0.	0.
4641	5027	NC MU RETAIL	acre		57.6	8620.	6258.
4641	6012	NC MU OFFICE	acre		34.7	825.	632.
4641	9101	INACTIVE USE	acre		0.8	0.	0.
4641		TOTAL				10330.	7512.
4642	162	NC MU MULTI-FAMILY	du		104.0	801.	562.
4642	4112	RIGHT-OF-WAY	acre		0.8	0.	0.
4642	5027	NC MU RETAIL	acre		49.9	7470.	5423.
4642	6012	NC MU OFFICE	acre		30.0	715.	548.
4642		TOTAL				8986.	6533.
4643	101	SINGLE FAMILY	du		24.0	374.	261.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4643	102	MULTI-FAMILY	du		133.0	1423.	999.
4643	162	NC MU MULTI-FAMILY	du		1.0	8.	5.
4643	4112	RIGHT-OF-WAY	acre		2.9	0.	0.
4643	5027	NC MU RETAIL	acre		5.1	763.	554.
4643	6012	NC MU OFFICE	acre		3.1	73.	56.
4643	6102	CHURCH	acre		1.0	56.	43.
4643	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4643		TOTAL				4816.	3104.
4644	101	SINGLE FAMILY	du		215.0	3354.	2340.
4644	102	MULTI-FAMILY	du		16.0	171.	120.
4644	4112	RIGHT-OF-WAY	acre		8.7	0.	0.
4644	4113	COMMUNICATION OR UTILITY	acre		0.3	1.	1.
4644	5007	STREETFRONT COMMERCIAL	acre		0.1	138.	100.
4644	6102	CHURCH	acre		0.5	28.	21.
4644	6105	FIRE OR POLICE STATION	acre		0.3	104.	77.
4644	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4644		TOTAL				5915.	3845.
4645	101	SINGLE FAMILY	du		20.0	312.	218.
4645	4112	RIGHT-OF-WAY	acre		0.5	0.	0.
4645	6102	CHURCH	acre		8.2	439.	337.
4645		TOTAL				751.	555.
4646	162	NC MU MULTI-FAMILY	du		40.0	308.	216.
4646	5027	NC MU RETAIL	acre		25.5	3816.	2771.
4646	6012	NC MU OFFICE	acre		15.4	365.	280.
4646		TOTAL				4490.	3267.
4648	101	SINGLE FAMILY	du		8.0	125.	87.
4648	103	MOBILE HOME PARK	du		178.0	1175.	779.
4648	162	NC MU MULTI-FAMILY	du		7.0	54.	38.
4648	4112	RIGHT-OF-WAY	acre		6.9	0.	0.
4648	5007	STREETFRONT COMMERCIAL	acre		0.6	881.	639.
4648	5027	NC MU RETAIL	acre		6.3	944.	686.
4648	6012	NC MU OFFICE	acre		3.8	90.	69.
4648		TOTAL				3269.	2298.
4649	101	SINGLE FAMILY	du		41.0	640.	446.
4649	4112	RIGHT-OF-WAY	acre		2.2	0.	0.
4649	4113	COMMUNICATION OR UTILITY	acre		0.2	1.	1.
4649	9101	INACTIVE USE	acre		3.7	0.	0.
4649		TOTAL				641.	447.
4650	101	SINGLE FAMILY	du		99.0	1544.	1078.
4650	4112	RIGHT-OF-WAY	acre		5.8	0.	0.
4650		TOTAL				1544.	1078.
4651	101	SINGLE FAMILY	du		67.0	1045.	729.
4651	4112	RIGHT-OF-WAY	acre		3.8	0.	0.
4651		TOTAL				1045.	729.

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Zone	Code	Name	Land Use		Trips	
			Type	Amount	Person	Vehicle
4652	101	SINGLE FAMILY	du	47.0	733.	512.
4652	5014	SPECIALTY COMMERCIAL NC	acre	12.4	774.	547.
4652		TOTAL			1507.	1059.

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Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
3946	4112	RIGHT-OF-WAY	acre		0.4	0.	0.
3946		TOTAL				0.	0.
3990	101	SINGLE FAMILY	du		176.0	2746.	1916.
3990	4112	RIGHT-OF-WAY	acre		9.8	0.	0.
3990		TOTAL				2746.	1916.
3992	101	SINGLE FAMILY	du		200.0	3120.	2177.
3992	4112	RIGHT-OF-WAY	acre		11.7	0.	0.
3992		TOTAL				3120.	2177.
4001	101	SINGLE FAMILY	du		229.0	3572.	2493.
4001	4112	RIGHT-OF-WAY	acre		13.8	0.	0.
4001	9101	INACTIVE USE	acre		0.4	0.	0.
4001		TOTAL				3572.	2493.
4002	101	SINGLE FAMILY	du		47.0	733.	512.
4002	4112	RIGHT-OF-WAY	acre		5.2	0.	0.
4002	5004	NEIGHBORHOOD COMMERCIAL	acre		6.7	10219.	7231.
4002	5008	OTHER COMMERCIAL (CBF)	acre		0.8	1078.	783.
4002	9700	MIXED USE 75% STREETFRONT	acre		3.0	2891.	2099.
4002		TOTAL				14923.	10624.
4006	101	SINGLE FAMILY	du		290.0	4524.	3157.
4006	4112	RIGHT-OF-WAY	acre		22.2	0.	0.
4006	4113	COMMUNICATION OR UTILITY	acre		2.0	8.	6.
4006	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4006	9101	INACTIVE USE	acre		2.4	0.	0.
4006		TOTAL				6651.	4348.
4015	101	SINGLE FAMILY	du		76.0	1186.	827.
4015	4112	RIGHT-OF-WAY	acre		10.4	0.	0.
4015	4113	COMMUNICATION OR UTILITY	acre		0.6	2.	2.
4015	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4015	7601	ACTIVE PARK	acre		23.4	1556.	1024.
4015	8002	INTENSIVE AGRICULTURE	acre		1.5	1.	1.
4015		TOTAL				4863.	3039.
4017	101	SINGLE FAMILY	du		111.0	1732.	1208.
4017	102	MULTI-FAMILY	du		288.0	3082.	2163.
4017	103	MOBILE HOME PARK	du		87.0	574.	381.
4017	4112	RIGHT-OF-WAY	acre		12.1	0.	0.
4017	5004	NEIGHBORHOOD COMMERCIAL	acre		1.9	2910.	2059.
4017	5007	STREETFRONT COMMERCIAL	acre		0.2	301.	218.
4017	5009	OTHER COMMERCIAL	acre		0.3	33.	24.
4017	9101	INACTIVE USE	acre		0.6	0.	0.
4017	9700	MIXED USE 75% STREETFRONT	acre		2.5	2468.	1792.
4017		TOTAL				11100.	7846.
4027	101	SINGLE FAMILY	du		70.0	1092.	762.
4027	102	MULTI-FAMILY	du		60.0	642.	451.
4027	4112	RIGHT-OF-WAY	acre		11.2	0.	0.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4027	5007	STREETFRONT COMMERCIAL	acre		0.4	663.	481.
4027	6002	LOW RISE OFFICE	acre		0.3	113.	86.
4027	6102	CHURCH	acre		2.2	115.	88.
4027	6502	HOSPITAL	acre		12.0	4043.	2974.
4027	6509	OTHER HEALTH CARE	acre		1.4	671.	498.
4027	6809	OTHER SCHOOL	acre		4.4	883.	728.
4027	7607	RESIDENTIAL RECREATION	acre		0.8	0.	0.
4027	9700	MIXED USE 75% STREETFRONT	acre		1.0	983.	714.
4027		TOTAL				9204.	6783.
4029	4112	RIGHT-OF-WAY	acre		16.6	0.	0.
4029	5007	STREETFRONT COMMERCIAL	acre		0.4	534.	388.
4029	6102	CHURCH	acre		1.4	74.	57.
4029	6109	OTHER PUBLIC SERVICE	acre		0.9	361.	261.
4029	6701	MILITARY USE	acre		3.8	0.	0.
4029		TOTAL				968.	705.
4030	101	SINGLE FAMILY	du		162.0	2527.	1764.
4030	102	MULTI-FAMILY	du		51.0	546.	383.
4030	4112	RIGHT-OF-WAY	acre		7.3	0.	0.
4030	4113	COMMUNICATION OR UTILITY	acre		0.2	1.	1.
4030		TOTAL				3074.	2147.
4033	101	SINGLE FAMILY	du		11.0	172.	120.
4033	1409	OTHER GROUP QUARTERS	acre		0.6	3.	2.
4033	4112	RIGHT-OF-WAY	acre		4.0	0.	0.
4033	6502	HOSPITAL	acre		17.7	5988.	4404.
4033	6509	OTHER HEALTH CARE	acre		5.0	2428.	1802.
4033		TOTAL				8590.	6327.
4036	101	SINGLE FAMILY	du		81.0	1264.	882.
4036	4112	RIGHT-OF-WAY	acre		11.1	0.	0.
4036	5004	NEIGHBORHOOD COMMERCIAL	acre		10.4	15818.	11191.
4036	5007	STREETFRONT COMMERCIAL	acre		0.4	550.	400.
4036	5008	OTHER COMMERCIAL (CBF)	acre		1.0	1379.	1001.
4036	9101	INACTIVE USE	acre		0.3	0.	0.
4036		TOTAL				19011.	13474.
4037	101	SINGLE FAMILY	du		65.0	1014.	708.
4037	102	MULTI-FAMILY	du		140.0	1498.	1052.
4037	1409	OTHER GROUP QUARTERS	acre		4.6	22.	16.
4037	4112	RIGHT-OF-WAY	acre		14.9	0.	0.
4037	6102	CHURCH	acre		1.2	64.	49.
4037	6502	HOSPITAL	acre		1.3	452.	332.
4037	6509	OTHER HEALTH CARE	acre		0.6	287.	213.
4037	7607	RESIDENTIAL RECREATION	acre		0.2	0.	0.
4037		TOTAL				3337.	2369.
4040	101	SINGLE FAMILY	du		146.0	2278.	1589.
4040	102	MULTI-FAMILY	du		29.0	310.	218.
4040	1409	OTHER GROUP QUARTERS	acre		0.7	3.	2.
4040	4112	RIGHT-OF-WAY	acre		5.7	0.	0.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4040	5007	STREETFRONT COMMERCIAL	acre		0.3	482.	350.
4040	5009	OTHER COMMERCIAL	acre		0.8	106.	77.
4040	9700	MIXED USE 75% STREETFRONT	acre		0.4	366.	266.
4040		TOTAL				3545.	2502.
4041	101	SINGLE FAMILY	du		94.0	1466.	1023.
4041	102	MULTI-FAMILY	du		19.0	203.	143.
4041	4112	RIGHT-OF-WAY	acre		7.3	0.	0.
4041		TOTAL				1670.	1166.
4043	101	SINGLE FAMILY	du		122.0	1903.	1328.
4043	102	MULTI-FAMILY	du		567.0	6067.	4259.
4043	4112	RIGHT-OF-WAY	acre		7.9	0.	0.
4043	5007	STREETFRONT COMMERCIAL	acre		1.0	1552.	1127.
4043	9101	INACTIVE USE	acre		1.0	0.	0.
4043	9700	MIXED USE 75% STREETFRONT	acre		1.5	1505.	1093.
4043		TOTAL				11027.	7807.
4048	101	SINGLE FAMILY	du		109.0	1700.	1187.
4048	102	MULTI-FAMILY	du		25.0	267.	188.
4048	4112	RIGHT-OF-WAY	acre		6.3	0.	0.
4048		TOTAL				1968.	1374.
4049	101	SINGLE FAMILY	du		1.0	16.	11.
4049	4112	RIGHT-OF-WAY	acre		3.6	0.	0.
4049	5004	NEIGHBORHOOD COMMERCIAL	acre		4.1	6276.	4440.
4049	5007	STREETFRONT COMMERCIAL	acre		3.7	5559.	4035.
4049	9700	MIXED USE 75% STREETFRONT	acre		1.4	1338.	971.
4049		TOTAL				13188.	9458.
4053	102	MULTI-FAMILY	du		250.0	2675.	1878.
4053	1409	OTHER GROUP QUARTERS	acre		2.6	12.	9.
4053	4112	RIGHT-OF-WAY	acre		4.4	0.	0.
4053	5004	NEIGHBORHOOD COMMERCIAL	acre		7.5	11431.	8088.
4053	6002	LOW RISE OFFICE	acre		1.4	505.	387.
4053	6102	CHURCH	acre		0.7	36.	28.
4053	6509	OTHER HEALTH CARE	acre		2.0	970.	719.
4053		TOTAL				15629.	11109.
4056	101	SINGLE FAMILY	du		3.0	47.	33.
4056	102	MULTI-FAMILY	du		7.0	75.	53.
4056	4112	RIGHT-OF-WAY	acre		10.7	0.	0.
4056	9700	MIXED USE 75% STREETFRONT	acre		10.7	10434.	7575.
4056		TOTAL				10556.	7660.
4060	4112	RIGHT-OF-WAY	acre		33.7	0.	0.
4060	6701	MILITARY USE	acre		109.8	0.	0.
4060		TOTAL				0.	0.
4062	101	SINGLE FAMILY	du		160.0	2496.	1742.
4062	4112	RIGHT-OF-WAY	acre		8.5	0.	0.
4062	9101	INACTIVE USE	acre		0.3	0.	0.
4062		TOTAL				2496.	1742.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4063	101	SINGLE FAMILY	du		111.0	1732.	1208.
4063	102	MULTI-FAMILY	du		157.0	1680.	1179.
4063	4112	RIGHT-OF-WAY	acre		9.8	0.	0.
4063	5004	NEIGHBORHOOD COMMERCIAL	acre		1.4	2181.	1543.
4063	5007	STREETFRONT COMMERCIAL	acre		0.9	1321.	959.
4063	5009	OTHER COMMERCIAL	acre		0.2	20.	14.
4063	6002	LOW RISE OFFICE	acre		0.5	181.	139.
4063	6102	CHURCH	acre		2.0	107.	82.
4063	6509	OTHER HEALTH CARE	acre		0.2	112.	83.
4063	9700	MIXED USE 75% STREETFRONT	acre		7.0	6837.	4964.
4063		TOTAL				14169.	10171.
4065	101	SINGLE FAMILY	du		188.0	2933.	2047.
4065	4112	RIGHT-OF-WAY	acre		11.6	0.	0.
4065	4114	PARKING	acre		0.3	0.	0.
4065	5004	NEIGHBORHOOD COMMERCIAL	acre		1.9	2816.	1992.
4065	5006	AUTO COMMERCIAL	acre		1.6	766.	542.
4065	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4065	6809	OTHER SCHOOL	acre		0.1	9.	8.
4065	9101	INACTIVE USE	acre		0.4	0.	0.
4065		TOTAL				8642.	5773.
4066	101	SINGLE FAMILY	du		69.0	1076.	751.
4066	102	MULTI-FAMILY	du		114.0	1220.	856.
4066	4112	RIGHT-OF-WAY	acre		19.9	0.	0.
4066	4114	PARKING	acre		0.3	0.	0.
4066	5004	NEIGHBORHOOD COMMERCIAL	acre		2.5	3860.	2731.
4066	6102	CHURCH	acre		0.4	21.	16.
4066		TOTAL				6177.	4355.
4069	4112	RIGHT-OF-WAY	acre		8.0	0.	0.
4069	6701	MILITARY USE	acre		208.7	0.	0.
4069	9101	INACTIVE USE	acre		138.4	0.	0.
4069		TOTAL				0.	0.
4071	101	SINGLE FAMILY	du		10.0	156.	109.
4071	4112	RIGHT-OF-WAY	acre		8.5	0.	0.
4071	5004	NEIGHBORHOOD COMMERCIAL	acre		7.6	11604.	8210.
4071	5009	OTHER COMMERCIAL	acre		1.3	164.	119.
4071	9700	MIXED USE 75% STREETFRONT	acre		1.5	1414.	1026.
4071		TOTAL				13338.	9465.
4072	4112	RIGHT-OF-WAY	acre		5.1	0.	0.
4072	5004	NEIGHBORHOOD COMMERCIAL	acre		2.5	3881.	2746.
4072	5007	STREETFRONT COMMERCIAL	acre		4.9	7376.	5355.
4072	5008	OTHER COMMERCIAL (CBF)	acre		0.4	582.	423.
4072	9700	MIXED USE 75% STREETFRONT	acre		1.1	1094.	794.
4072		TOTAL				12933.	9317.
4074	101	SINGLE FAMILY	du		51.0	796.	555.
4074	102	MULTI-FAMILY	du		8.0	86.	60.
4074	4112	RIGHT-OF-WAY	acre		9.4	0.	0.

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Zone	Code	Name	Type	Amount	-----Trips-----	
					Person	Vehicle
4074	4114	PARKING	acre	0.4	0.	0.
4074	5004	NEIGHBORHOOD COMMERCIAL	acre	1.8	2798.	1979.
4074	5007	STREETFRONT COMMERCIAL	acre	0.6	918.	667.
4074	6002	LOW RISE OFFICE	acre	1.3	476.	365.
4074	6102	CHURCH	acre	3.6	193.	148.
4074	9700	MIXED USE 75% STREETFRONT	acre	2.3	2198.	1596.
4074		TOTAL			7464.	5370.
4075	4112	RIGHT-OF-WAY	acre	10.8	0.	0.
4075	5007	STREETFRONT COMMERCIAL	acre	1.1	1694.	1230.
4075	9700	MIXED USE 75% STREETFRONT	acre	11.7	11391.	8270.
4075		TOTAL			13085.	9500.
4076	101	SINGLE FAMILY	du	3.0	47.	33.
4076	102	MULTI-FAMILY	du	106.0	1134.	796.
4076	4112	RIGHT-OF-WAY	acre	2.6	0.	0.
4076	5004	NEIGHBORHOOD COMMERCIAL	acre	12.5	19073.	13495.
4076	5007	STREETFRONT COMMERCIAL	acre	0.5	742.	538.
4076	5008	OTHER COMMERCIAL (CBF)	acre	0.4	529.	384.
4076	9700	MIXED USE 75% STREETFRONT	acre	1.7	1644.	1193.
4076		TOTAL			23169.	16440.
4077	101	SINGLE FAMILY	du	8.0	125.	87.
4077	102	MULTI-FAMILY	du	56.0	599.	421.
4077	1501	LOW-RISE HOTEL OR MOTEL	acre	0.8	258.	159.
4077	4112	RIGHT-OF-WAY	acre	4.1	0.	0.
4077	5004	NEIGHBORHOOD COMMERCIAL	acre	9.1	13849.	9798.
4077	9700	MIXED USE 75% STREETFRONT	acre	1.9	1844.	1339.
4077		TOTAL			16675.	11804.
4080	101	SINGLE FAMILY	du	17.0	265.	185.
4080	102	MULTI-FAMILY	du	28.0	300.	210.
4080	4112	RIGHT-OF-WAY	acre	10.9	0.	0.
4080	9700	MIXED USE 75% STREETFRONT	acre	10.0	9719.	7056.
4080		TOTAL			10284.	7451.
4081	101	SINGLE FAMILY	du	187.0	2917.	2036.
4081	4112	RIGHT-OF-WAY	acre	13.2	0.	0.
4081	9101	INACTIVE USE	acre	0.6	0.	0.
4081		TOTAL			2917.	2036.
4082	101	SINGLE FAMILY	du	269.0	4196.	2928.
4082	102	MULTI-FAMILY	du	62.0	663.	466.
4082	4112	RIGHT-OF-WAY	acre	17.2	0.	0.
4082	4113	COMMUNICATION OR UTILITY	acre	0.3	1.	1.
4082	5007	STREETFRONT COMMERCIAL	acre	1.6	2388.	1734.
4082	6102	CHURCH	acre	2.5	134.	103.
4082	6809	OTHER SCHOOL	acre	0.6	110.	91.
4082	9700	MIXED USE 75% STREETFRONT	acre	2.3	2233.	1621.
4082		TOTAL			9725.	6943.
4084	102	MULTI-FAMILY	du	58.0	621.	436.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4084	1501	LOW-RISE HOTEL OR MOTEL	acre		3.2	1078.	665.
4084	4112	RIGHT-OF-WAY	acre		12.8	0.	0.
4084	5007	STREETFRONT COMMERCIAL	acre		2.3	3499.	2541.
4084	5008	OTHER COMMERCIAL (CBF)	acre		0.7	869.	631.
4084	5009	OTHER COMMERCIAL	acre		0.5	68.	50.
4084	6002	LOW RISE OFFICE	acre		0.4	146.	112.
4084	9700	MIXED USE 75% STREETFRONT	acre		3.0	2899.	2105.
4084		TOTAL				9180.	6537.
4086	4112	RIGHT-OF-WAY	acre		4.1	0.	0.
4086	5003	COMMUNITY COMMERCIAL	acre		14.5	12187.	8623.
4086	5004	NEIGHBORHOOD COMMERCIAL	acre		7.0	10679.	7556.
4086	5007	STREETFRONT COMMERCIAL	acre		1.0	1466.	1064.
4086	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4086	9101	INACTIVE USE	acre		0.0	0.	0.
4086		TOTAL				26450.	18427.
4087	4112	RIGHT-OF-WAY	acre		5.7	0.	0.
4087	5003	COMMUNITY COMMERCIAL	acre		9.4	7907.	5594.
4087	5004	NEIGHBORHOOD COMMERCIAL	acre		13.6	20688.	14637.
4087		TOTAL				28594.	20231.
4092	101	SINGLE FAMILY	du		88.0	1373.	958.
4092	4112	RIGHT-OF-WAY	acre		6.0	0.	0.
4092	6002	LOW RISE OFFICE	acre		1.0	369.	282.
4092	6807	SCHOOL DISTRICT OFFICE	acre		3.8	964.	739.
4092		TOTAL				2706.	1979.
4093	4112	RIGHT-OF-WAY	acre		2.5	0.	0.
4093	6003	GOV'T OFFICE OR CENTER	acre		3.0	3216.	2415.
4093	6103	LIBRARY	acre		1.8	766.	519.
4093	7601	ACTIVE PARK	acre		23.1	1537.	1011.
4093		TOTAL				5519.	3945.
4094	4112	RIGHT-OF-WAY	acre		6.5	0.	0.
4094	6003	GOV'T OFFICE OR CENTER	acre		0.6	624.	468.
4094	6809	OTHER SCHOOL	acre		1.6	319.	264.
4094	9700	MIXED USE 75% STREETFRONT	acre		7.2	7039.	5110.
4094		TOTAL				7982.	5842.
4095	101	SINGLE FAMILY	du		58.0	905.	631.
4095	102	MULTI-FAMILY	du		258.0	2761.	1938.
4095	4112	RIGHT-OF-WAY	acre		7.6	0.	0.
4095	6102	CHURCH	acre		1.7	91.	70.
4095	7601	ACTIVE PARK	acre		0.2	12.	8.
4095	9700	MIXED USE 75% STREETFRONT	acre		1.2	1194.	867.
4095		TOTAL				4963.	3515.
4097	101	SINGLE FAMILY	du		196.0	3058.	2134.
4097	102	MULTI-FAMILY	du		298.0	3189.	2239.
4097	4112	RIGHT-OF-WAY	acre		18.1	0.	0.
4097	5007	STREETFRONT COMMERCIAL	acre		0.3	399.	290.

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Zone	Code	Name	Land Use		Type	Amount	Trips	
							Person	Vehicle
4097	6002	LOW RISE OFFICE			acre	0.1	37.	28.
4097	6102	CHURCH			acre	0.9	50.	38.
4097	9700	MIXED USE 75% STREETFRONT			acre	1.4	1372.	996.
4097		TOTAL					8104.	5725.
4098	101	SINGLE FAMILY			du	36.0	562.	392.
4098	4112	RIGHT-OF-WAY			acre	9.4	0.	0.
4098	4113	COMMUNICATION OR UTILITY			acre	0.2	1.	1.
4098	9700	MIXED USE 75% STREETFRONT			acre	12.9	12492.	9069.
4098		TOTAL					13054.	9461.
4101	101	SINGLE FAMILY			du	130.0	2028.	1415.
4101	4112	RIGHT-OF-WAY			acre	9.0	0.	0.
4101	6102	CHURCH			acre	0.6	35.	27.
4101	6805	JUNIOR HIGH OR MIDDLE SCHOOL			acre	1.0	4206.	2586.
4101		TOTAL					6268.	4028.
4102	101	SINGLE FAMILY			du	83.0	1295.	904.
4102	102	MULTI-FAMILY			du	9.0	96.	68.
4102	2103	LIGHT INDUSTRY			acre	0.2	17.	13.
4102	4112	RIGHT-OF-WAY			acre	16.4	0.	0.
4102	9700	MIXED USE 75% STREETFRONT			acre	8.1	7897.	5733.
4102		TOTAL					9305.	6718.
4103	2103	LIGHT INDUSTRY			acre	9.2	923.	746.
4103	4112	RIGHT-OF-WAY			acre	12.1	0.	0.
4103	5007	STREETFRONT COMMERCIAL			acre	0.2	250.	181.
4103	9700	MIXED USE 75% STREETFRONT			acre	0.1	109.	79.
4103		TOTAL					1281.	1006.
4104	101	SINGLE FAMILY			du	6.0	94.	65.
4104	102	MULTI-FAMILY			du	48.0	514.	361.
4104	4112	RIGHT-OF-WAY			acre	5.3	0.	0.
4104	5007	STREETFRONT COMMERCIAL			acre	7.3	10914.	7923.
4104	5008	OTHER COMMERCIAL (CBF)			acre	0.5	669.	486.
4104	6104	POST OFFICE			acre	1.0	1081.	751.
4104	9700	MIXED USE 75% STREETFRONT			acre	0.9	899.	652.
4104		TOTAL					14170.	10239.
4107	101	SINGLE FAMILY			du	201.0	3136.	2188.
4107	102	MULTI-FAMILY			du	47.0	503.	353.
4107	4112	RIGHT-OF-WAY			acre	17.7	0.	0.
4107		TOTAL					3639.	2541.
4108	101	SINGLE FAMILY			du	17.0	265.	185.
4108	2103	LIGHT INDUSTRY			acre	0.0	3.	2.
4108	4112	RIGHT-OF-WAY			acre	12.9	0.	0.
4108	5009	OTHER COMMERCIAL			acre	6.3	807.	586.
4108	9700	MIXED USE 75% STREETFRONT			acre	4.5	4335.	3147.
4108		TOTAL					5410.	3920.
4109	4112	RIGHT-OF-WAY			acre	0.8	0.	0.
4109		TOTAL					0.	0.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4110	9101	INACTIVE USE	acre		0.0	0.	0.
4110		TOTAL				0.	0.
4114	101	SINGLE FAMILY	du		55.0	858.	599.
4114	102	MULTI-FAMILY	du		73.0	781.	548.
4114	4112	RIGHT-OF-WAY	acre		7.8	0.	0.
4114	6805	JUNIOR HIGH OR MIDDLE SCHOOL	acre		1.0	4206.	2586.
4114	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4114	9101	INACTIVE USE	acre		1.5	0.	0.
4114		TOTAL				7963.	4918.
4117	4112	RIGHT-OF-WAY	acre		7.2	0.	0.
4117	5009	OTHER COMMERCIAL	acre		2.9	372.	270.
4117	6103	LIBRARY	acre		2.1	918.	623.
4117	9700	MIXED USE 75% STREETFRONT	acre		4.9	4804.	3487.
4117		TOTAL				6094.	4380.
4118	4112	RIGHT-OF-WAY	acre		1.0	0.	0.
4118		TOTAL				0.	0.
4119	101	SINGLE FAMILY	du		72.0	1123.	784.
4119	102	MULTI-FAMILY	du		24.0	257.	180.
4119	4112	RIGHT-OF-WAY	acre		8.5	0.	0.
4119	5007	STREETFRONT COMMERCIAL	acre		0.5	727.	528.
4119	5009	OTHER COMMERCIAL	acre		2.6	333.	242.
4119	6102	CHURCH	acre		0.3	18.	14.
4119	6105	FIRE OR POLICE STATION	acre		1.4	432.	319.
4119	6109	OTHER PUBLIC SERVICE	acre		0.3	103.	75.
4119	9700	MIXED USE 75% STREETFRONT	acre		2.2	2112.	1533.
4119		TOTAL				5106.	3674.
4121	2001	HEAVY INDUSTRY	acre		7.7	601.	497.
4121	2101	INDUSTRIAL PARK	acre		0.3	50.	41.
4121	2103	LIGHT INDUSTRY	acre		12.0	1199.	969.
4121	4112	RIGHT-OF-WAY	acre		26.6	0.	0.
4121	9700	MIXED USE 75% STREETFRONT	acre		1.1	1085.	788.
4121		TOTAL				2934.	2294.
4124	101	SINGLE FAMILY	du		123.0	1919.	1339.
4124	102	MULTI-FAMILY	du		116.0	1241.	871.
4124	4112	RIGHT-OF-WAY	acre		9.3	0.	0.
4124	5009	OTHER COMMERCIAL	acre		0.5	59.	43.
4124		TOTAL				3219.	2253.
4125	102	MULTI-FAMILY	du		15.0	160.	113.
4125	4112	RIGHT-OF-WAY	acre		6.8	0.	0.
4125	5007	STREETFRONT COMMERCIAL	acre		6.8	10216.	7416.
4125	5008	OTHER COMMERCIAL (CBF)	acre		0.9	1193.	866.
4125	5009	OTHER COMMERCIAL	acre		0.2	22.	16.
4125	6002	LOW RISE OFFICE	acre		0.1	37.	28.
4125	9700	MIXED USE 75% STREETFRONT	acre		1.1	1049.	762.
4125		TOTAL				12678.	9202.

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Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
4126	2001	HEAVY INDUSTRY	acre		38.8	3017.	2495.
4126	2101	INDUSTRIAL PARK	acre		5.1	980.	803.
4126	2103	LIGHT INDUSTRY	acre		32.3	3235.	2615.
4126	2104	WAREHOUSING OR STORAGE	acre		8.5	282.	231.
4126	4112	RIGHT-OF-WAY	acre		19.7	0.	0.
4126	6701	MILITARY USE	acre		0.5	0.	0.
4126		TOTAL				7515.	6144.
4128	1503	RESORT	acre		4.0	632.	389.
4128	2103	LIGHT INDUSTRY	acre		13.0	1302.	1053.
4128	2104	WAREHOUSING OR STORAGE	acre		97.2	3219.	2631.
4128	4112	RIGHT-OF-WAY	acre		23.5	0.	0.
4128	4114	PARKING	acre		2.3	0.	0.
4128	4120	MARINE TERMINAL	acre		82.4	1170.	968.
4128	7601	ACTIVE PARK	acre		3.4	224.	148.
4128	9101	INACTIVE USE	acre		675.8	0.	0.
4128		TOTAL				6548.	5188.
4129	101	SINGLE FAMILY	du		182.0	2839.	1981.
4129	102	MULTI-FAMILY	du		21.0	225.	158.
4129	4112	RIGHT-OF-WAY	acre		12.1	0.	0.
4129	6102	CHURCH	acre		0.5	29.	22.
4129		TOTAL				3093.	2161.
4130	101	SINGLE FAMILY	du		32.0	499.	348.
4130	102	MULTI-FAMILY	du		628.0	6720.	4718.
4130	4112	RIGHT-OF-WAY	acre		8.3	0.	0.
4130	6109	OTHER PUBLIC SERVICE	acre		0.4	156.	113.
4130		TOTAL				7375.	5179.
4132	4112	RIGHT-OF-WAY	acre		11.9	0.	0.
4132	5006	AUTO COMMERCIAL	acre		23.4	11028.	7803.
4132	5007	STREETFRONT COMMERCIAL	acre		0.4	631.	458.
4132	5009	OTHER COMMERCIAL	acre		0.2	23.	17.
4132	6509	OTHER HEALTH CARE	acre		1.0	485.	360.
4132	9700	MIXED USE 75% STREETFRONT	acre		0.6	611.	444.
4132		TOTAL				12778.	9081.
4134	4112	RIGHT-OF-WAY	acre		7.7	0.	0.
4134	5009	OTHER COMMERCIAL	acre		6.0	762.	554.
4134	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4134	7601	ACTIVE PARK	acre		3.1	209.	137.
4134	9101	INACTIVE USE	acre		0.6	0.	0.
4134	9700	MIXED USE 75% STREETFRONT	acre		12.5	12128.	8805.
4134		TOTAL				15218.	10681.
4136	101	SINGLE FAMILY	du		156.0	2434.	1698.
4136	4112	RIGHT-OF-WAY	acre		13.3	0.	0.
4136		TOTAL				2434.	1698.
4139	101	SINGLE FAMILY	du		17.0	265.	185.
4139	102	MULTI-FAMILY	du		184.0	1969.	1382.

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Zone	Code	Land Use			Trips	
		Name	Type	Amount	Person	Vehicle
4139	4112	RIGHT-OF-WAY	acre	2.4	0.	0.
4139		TOTAL			2234.	1567.
4144	101	SINGLE FAMILY	du	33.0	515.	359.
4144	4112	RIGHT-OF-WAY	acre	1.0	0.	0.
4144		TOTAL			515.	359.
4145	2103	LIGHT INDUSTRY	acre	18.8	1886.	1524.
4145	4112	RIGHT-OF-WAY	acre	14.0	0.	0.
4145	9700	MIXED USE 75% STREETFRONT	acre	0.9	923.	670.
4145		TOTAL			2809.	2194.
4147	101	SINGLE FAMILY	du	13.0	203.	142.
4147	102	MULTI-FAMILY	du	14.0	150.	105.
4147	1409	OTHER GROUP QUARTERS	acre	1.1	5.	4.
4147	4112	RIGHT-OF-WAY	acre	1.8	0.	0.
4147	5007	STREETFRONT COMMERCIAL	acre	2.6	3905.	2835.
4147	5008	OTHER COMMERCIAL (CBF)	acre	0.5	634.	460.
4147	5009	OTHER COMMERCIAL	acre	0.5	59.	43.
4147	6102	CHURCH	acre	1.9	99.	76.
4147	6509	OTHER HEALTH CARE	acre	0.3	134.	99.
4147	9700	MIXED USE 75% STREETFRONT	acre	3.8	3646.	2647.
4147		TOTAL			8835.	6411.
4148	101	SINGLE FAMILY	du	83.0	1295.	904.
4148	102	MULTI-FAMILY	du	142.0	1519.	1067.
4148	4112	RIGHT-OF-WAY	acre	13.5	0.	0.
4148	5007	STREETFRONT COMMERCIAL	acre	0.4	562.	408.
4148	5009	OTHER COMMERCIAL	acre	0.9	119.	87.
4148	6102	CHURCH	acre	0.3	14.	11.
4148	6804	SENIOR HIGH SCHOOL	acre	1.0	5369.	2423.
4148	6806	ELEMENTARY SCHOOL	acre	1.0	2119.	1185.
4148	9101	INACTIVE USE	acre	0.0	0.	0.
4148	9700	MIXED USE 75% STREETFRONT	acre	0.2	188.	137.
4148		TOTAL			11186.	6220.
4149	101	SINGLE FAMILY	du	613.0	9563.	6673.
4149	4112	RIGHT-OF-WAY	acre	63.9	0.	0.
4149	6102	CHURCH	acre	2.1	112.	86.
4149	7601	ACTIVE PARK	acre	2.2	150.	98.
4149	9101	INACTIVE USE	acre	0.9	0.	0.
4149		TOTAL			9825.	6858.
4150	4112	RIGHT-OF-WAY	acre	9.7	0.	0.
4150	4114	PARKING	acre	1.6	0.	0.
4150	5006	AUTO COMMERCIAL	acre	2.0	935.	662.
4150	5009	OTHER COMMERCIAL	acre	0.1	8.	6.
4150	6809	OTHER SCHOOL	acre	1.7	333.	275.
4150	9101	INACTIVE USE	acre	0.1	0.	0.
4150	9700	MIXED USE 75% STREETFRONT	acre	10.9	10613.	7705.
4150		TOTAL			11890.	8647.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4151	101	SINGLE FAMILY	du		102.0	1591.	1110.
4151	102	MULTI-FAMILY	du		295.0	3156.	2216.
4151	1409	OTHER GROUP QUARTERS	acre		2.1	10.	7.
4151	2101	INDUSTRIAL PARK	acre		1.2	236.	194.
4151	4112	RIGHT-OF-WAY	acre		11.1	0.	0.
4151	5006	AUTO COMMERCIAL	acre		3.2	1524.	1078.
4151	9101	INACTIVE USE	acre		0.0	0.	0.
4151	9700	MIXED USE 75% STREETFRONT	acre		2.7	2585.	1877.
4151		TOTAL				9103.	6482.
4153	101	SINGLE FAMILY	du		5.0	78.	54.
4153	4112	RIGHT-OF-WAY	acre		8.8	0.	0.
4153	5003	COMMUNITY COMMERCIAL	acre		2.9	2466.	1745.
4153	5009	OTHER COMMERCIAL	acre		0.2	27.	19.
4153	9101	INACTIVE USE	acre		16.0	0.	0.
4153	9700	MIXED USE 75% STREETFRONT	acre		24.2	23551.	17097.
4153		TOTAL				26121.	18916.
4155	4112	RIGHT-OF-WAY	acre		10.9	0.	0.
4155	5006	AUTO COMMERCIAL	acre		21.2	10009.	7082.
4155	5007	STREETFRONT COMMERCIAL	acre		0.3	393.	286.
4155	9700	MIXED USE 75% STREETFRONT	acre		0.6	587.	426.
4155		TOTAL				10989.	7793.
4164	2101	INDUSTRIAL PARK	acre		31.1	5975.	4898.
4164	2104	WAREHOUSING OR STORAGE	acre		1.9	63.	52.
4164	4112	RIGHT-OF-WAY	acre		37.8	0.	0.
4164	9101	INACTIVE USE	acre		5.8	0.	0.
4164		TOTAL				6038.	4950.
4166	4112	RIGHT-OF-WAY	acre		40.5	0.	0.
4166	5002	REGIONAL COMMERCIAL	acre		59.5	44679.	31548.
4166	9101	INACTIVE USE	acre		53.7	0.	0.
4166	9700	MIXED USE 75% STREETFRONT	acre		12.2	11825.	8585.
4166		TOTAL				56504.	40132.
4168	1501	LOW-RISE HOTEL OR MOTEL	acre		5.9	2005.	1236.
4168	1503	RESORT	acre		4.8	767.	473.
4168	2103	LIGHT INDUSTRY	acre		41.6	4169.	3370.
4168	4112	RIGHT-OF-WAY	acre		8.4	0.	0.
4168	5009	OTHER COMMERCIAL	acre		8.3	1059.	769.
4168	9101	INACTIVE USE	acre		26.7	0.	0.
4168		TOTAL				8001.	5848.
4170	101	SINGLE FAMILY	du		18.0	281.	196.
4170	2104	WAREHOUSING OR STORAGE	acre		7.3	240.	197.
4170	4112	RIGHT-OF-WAY	acre		17.9	0.	0.
4170	4113	COMMUNICATION OR UTILITY	acre		2.5	10.	8.
4170	5007	STREETFRONT COMMERCIAL	acre		0.4	679.	493.
4170	9101	INACTIVE USE	acre		2.7	0.	0.
4170		TOTAL				1210.	893.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4179	101	SINGLE FAMILY	du		29.0	452.	316.
4179	102	MULTI-FAMILY	du		11.0	118.	83.
4179	2103	LIGHT INDUSTRY	acre		2.2	218.	176.
4179	4112	RIGHT-OF-WAY	acre		2.9	0.	0.
4179	5006	AUTO COMMERCIAL	acre		5.7	2683.	1898.
4179	5009	OTHER COMMERCIAL	acre		4.9	630.	457.
4179	6002	LOW RISE OFFICE	acre		0.9	308.	236.
4179	9700	MIXED USE 75% STREETFRONT	acre		0.3	344.	250.
4179		TOTAL				4753.	3416.
4188	2101	INDUSTRIAL PARK	acre		13.6	2618.	2146.
4188	2104	WAREHOUSING OR STORAGE	acre		0.9	30.	24.
4188	4112	RIGHT-OF-WAY	acre		54.9	0.	0.
4188	4114	PARKING	acre		5.1	0.	0.
4188	5007	STREETFRONT COMMERCIAL	acre		0.8	1161.	842.
4188	9101	INACTIVE USE	acre		33.1	0.	0.
4188		TOTAL				3808.	3013.
4191	4112	RIGHT-OF-WAY	acre		3.1	0.	0.
4191	5009	OTHER COMMERCIAL	acre		3.4	436.	316.
4191	7207	MARINA	acre		20.2	1128.	770.
4191	9101	INACTIVE USE	acre		20.2	0.	0.
4191		TOTAL				1564.	1086.
4281	9101	INACTIVE USE	acre		199.2	0.	0.
4281		TOTAL				0.	0.
4606	2201	EXTRACTIVE INDUSTRY	acre		213.8	321.	265.
4606		TOTAL				321.	265.
4615	101	SINGLE FAMILY	du		96.0	1498.	1045.
4615	102	MULTI-FAMILY	du		28.0	300.	210.
4615	4112	RIGHT-OF-WAY	acre		6.0	0.	0.
4615	9101	INACTIVE USE	acre		0.0	0.	0.
4615		TOTAL				1797.	1255.
4616	101	SINGLE FAMILY	du		87.0	1357.	947.
4616	102	MULTI-FAMILY	du		20.0	214.	150.
4616	4112	RIGHT-OF-WAY	acre		6.2	0.	0.
4616		TOTAL				1571.	1097.
4617	101	SINGLE FAMILY	du		8.0	125.	87.
4617	4112	RIGHT-OF-WAY	acre		1.8	0.	0.
4617	5007	STREETFRONT COMMERCIAL	acre		0.7	1018.	739.
4617	5009	OTHER COMMERCIAL	acre		0.1	12.	9.
4617	9700	MIXED USE 75% STREETFRONT	acre		1.4	1365.	991.
4617		TOTAL				2520.	1826.
4618	101	SINGLE FAMILY	du		165.0	2574.	1796.
4618	102	MULTI-FAMILY	du		178.0	1905.	1337.
4618	4112	RIGHT-OF-WAY	acre		13.1	0.	0.
4618	5009	OTHER COMMERCIAL	acre		0.2	23.	17.

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Zone	Code	Name	Land Use		Type	Amount	-----Trips-----	
							Person	Vehicle
4618	9700	MIXED USE 75% STREETFRONT			acre	2.5	2466.	1790.
4618		TOTAL					6968.	4940.
4619	101	SINGLE FAMILY			du	125.0	1950.	1361.
4619	102	MULTI-FAMILY			du	50.0	535.	376.
4619	4112	RIGHT-OF-WAY			acre	5.2	0.	0.
4619		TOTAL					2485.	1736.
4620	101	SINGLE FAMILY			du	104.0	1622.	1132.
4620	102	MULTI-FAMILY			du	32.0	342.	240.
4620	4112	RIGHT-OF-WAY			acre	7.4	0.	0.
4620	6102	CHURCH			acre	0.2	11.	8.
4620		TOTAL					1976.	1381.
4621	101	SINGLE FAMILY			du	175.0	2730.	1905.
4621	102	MULTI-FAMILY			du	184.0	1969.	1382.
4621	4112	RIGHT-OF-WAY			acre	9.2	0.	0.
4621		TOTAL					4699.	3287.
4622	101	SINGLE FAMILY			du	64.0	998.	697.
4622	102	MULTI-FAMILY			du	42.0	449.	316.
4622	4112	RIGHT-OF-WAY			acre	6.9	0.	0.
4622	5007	STREETFRONT COMMERCIAL			acre	0.2	256.	186.
4622	9700	MIXED USE 75% STREETFRONT			acre	4.0	3880.	2816.
4622		TOTAL					5583.	4014.
4623	101	SINGLE FAMILY			du	5.0	78.	54.
4623	102	MULTI-FAMILY			du	229.0	2450.	1720.
4623	4112	RIGHT-OF-WAY			acre	12.4	0.	0.
4623	5007	STREETFRONT COMMERCIAL			acre	0.9	1358.	986.
4623	5008	OTHER COMMERCIAL (CBF)			acre	0.5	684.	496.
4623	9700	MIXED USE 75% STREETFRONT			acre	0.1	64.	47.
4623		TOTAL					4634.	3303.
4624	4112	RIGHT-OF-WAY			acre	13.2	0.	0.
4624	5009	OTHER COMMERCIAL			acre	1.6	208.	151.
4624	9700	MIXED USE 75% STREETFRONT			acre	0.6	538.	391.
4624		TOTAL					746.	542.
4625	2103	LIGHT INDUSTRY			acre	1.4	137.	111.
4625	4112	RIGHT-OF-WAY			acre	4.7	0.	0.
4625	6003	GOV'T OFFICE OR CENTER			acre	0.7	785.	589.
4625	6809	OTHER SCHOOL			acre	1.7	347.	286.
4625	9700	MIXED USE 75% STREETFRONT			acre	1.9	1847.	1341.
4625		TOTAL					3116.	2327.
4626	101	SINGLE FAMILY			du	51.0	796.	555.
4626	102	MULTI-FAMILY			du	64.0	685.	481.
4626	4112	RIGHT-OF-WAY			acre	9.1	0.	0.
4626	4114	PARKING			acre	0.2	0.	0.
4626	6102	CHURCH			acre	0.1	6.	5.
4626	6109	OTHER PUBLIC SERVICE			acre	0.9	365.	264.

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Zone	Code	Name	Land Use		Amount	-----Trips-----	
			Type			Person	Vehicle
4626	6509	OTHER HEALTH CARE	acre		0.5	231.	171.
4626	7601	ACTIVE PARK	acre		0.3	23.	15.
4626	9700	MIXED USE 75% STREETFRONT	acre		5.9	5744.	4170.
4626		TOTAL				7849.	5661.
4627	101	SINGLE FAMILY	du		19.0	296.	207.
4627	102	MULTI-FAMILY	du		123.0	1316.	924.
4627	4112	RIGHT-OF-WAY	acre		4.0	0.	0.
4627	6109	OTHER PUBLIC SERVICE	acre		0.4	156.	113.
4627	9700	MIXED USE 75% STREETFRONT	acre		0.1	135.	98.
4627		TOTAL				1903.	1342.
4628	101	SINGLE FAMILY	du		11.0	172.	120.
4628	102	MULTI-FAMILY	du		375.0	4012.	2817.
4628	4112	RIGHT-OF-WAY	acre		4.7	0.	0.
4628	6109	OTHER PUBLIC SERVICE	acre		1.7	676.	489.
4628		TOTAL				4860.	3425.
4629	2103	LIGHT INDUSTRY	acre		4.1	410.	332.
4629	4112	RIGHT-OF-WAY	acre		3.9	0.	0.
4629	9700	MIXED USE 75% STREETFRONT	acre		0.1	130.	95.
4629		TOTAL				541.	426.
4630	4112	RIGHT-OF-WAY	acre		14.2	0.	0.
4630	5009	OTHER COMMERCIAL	acre		4.3	547.	397.
4630	9700	MIXED USE 75% STREETFRONT	acre		2.9	2833.	2057.
4630		TOTAL				3380.	2454.
4631	101	SINGLE FAMILY	du		101.0	1576.	1099.
4631	102	MULTI-FAMILY	du		475.0	5082.	3568.
4631	4112	RIGHT-OF-WAY	acre		13.1	0.	0.
4631	9101	INACTIVE USE	acre		0.1	0.	0.
4631		TOTAL				6658.	4668.
4632	101	SINGLE FAMILY	du		195.0	3042.	2123.
4632	102	MULTI-FAMILY	du		240.0	2568.	1803.
4632	4112	RIGHT-OF-WAY	acre		13.3	0.	0.
4632	5007	STREETFRONT COMMERCIAL	acre		1.0	1458.	1059.
4632	9700	MIXED USE 75% STREETFRONT	acre		0.6	541.	393.
4632		TOTAL				7609.	5377.
4633	1501	LOW-RISE HOTEL OR MOTEL	acre		1.2	407.	251.
4633	2103	LIGHT INDUSTRY	acre		0.9	89.	72.
4633	4112	RIGHT-OF-WAY	acre		1.2	0.	0.
4633		TOTAL				495.	322.
4634	1501	LOW-RISE HOTEL OR MOTEL	acre		1.6	562.	346.
4634	4112	RIGHT-OF-WAY	acre		0.7	0.	0.
4634		TOTAL				562.	346.
4635	2101	INDUSTRIAL PARK	acre		0.0	3.	3.
4635	4112	RIGHT-OF-WAY	acre		1.8	0.	0.

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4635	5007	STREETFRONT COMMERCIAL	acre		2.9	4385.	3183.
4635	6002	LOW RISE OFFICE	acre		3.8	1353.	1037.
4635	9101	INACTIVE USE	acre		2.3	0.	0.
4635		TOTAL				5741.	4223.
4636	2101	INDUSTRIAL PARK	acre		17.6	3381.	2772.
4636	4112	RIGHT-OF-WAY	acre		4.0	0.	0.
4636		TOTAL				3381.	2772.
4637	101	SINGLE FAMILY	du		114.0	1778.	1241.
4637	4112	RIGHT-OF-WAY	acre		8.8	0.	0.
4637	7601	ACTIVE PARK	acre		7.6	507.	333.
4637		TOTAL				2285.	1574.
4638	101	SINGLE FAMILY	du		37.0	577.	403.
4638	102	MULTI-FAMILY	du		141.0	1509.	1059.
4638	4112	RIGHT-OF-WAY	acre		16.3	0.	0.
4638	5009	OTHER COMMERCIAL	acre		0.4	49.	35.
4638	7601	ACTIVE PARK	acre		62.8	4179.	2750.
4638		TOTAL				6313.	4247.
4639	2101	INDUSTRIAL PARK	acre		6.4	1236.	1014.
4639	2103	LIGHT INDUSTRY	acre		0.4	38.	31.
4639	2104	WAREHOUSING OR STORAGE	acre		7.6	252.	206.
4639	4112	RIGHT-OF-WAY	acre		8.5	0.	0.
4639	5006	AUTO COMMERCIAL	acre		9.1	4320.	3057.
4639		TOTAL				5846.	4306.
4640	101	SINGLE FAMILY	du		12.0	187.	131.
4640	2103	LIGHT INDUSTRY	acre		3.5	346.	280.
4640	4112	RIGHT-OF-WAY	acre		3.9	0.	0.
4640	5002	REGIONAL COMMERCIAL	acre		8.0	6001.	4237.
4640	5009	OTHER COMMERCIAL	acre		0.1	10.	7.
4640	9101	INACTIVE USE	acre		0.9	0.	0.
4640	9700	MIXED USE 75% STREETFRONT	acre		2.5	2439.	1770.
4640		TOTAL				8984.	6426.
4641	4112	RIGHT-OF-WAY	acre		3.0	0.	0.
4641	5004	NEIGHBORHOOD COMMERCIAL	acre		16.3	24917.	17629.
4641	9101	INACTIVE USE	acre		0.8	0.	0.
4641		TOTAL				24917.	17629.
4642	4112	RIGHT-OF-WAY	acre		0.8	0.	0.
4642	5003	COMMUNITY COMMERCIAL	acre		14.9	12471.	8823.
4642	9101	INACTIVE USE	acre		4.4	0.	0.
4642		TOTAL				12471.	8823.
4643	101	SINGLE FAMILY	du		24.0	374.	261.
4643	102	MULTI-FAMILY	du		133.0	1423.	999.
4643	4112	RIGHT-OF-WAY	acre		2.9	0.	0.
4643	5007	STREETFRONT COMMERCIAL	acre		1.3	1934.	1404.
4643	6102	CHURCH	acre		1.0	56.	43.

CVSB(Chula Vista Southbay)- 2030 Base
trip generation and land use by zone

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Zone	Code	Name	Land Use		Amount	Trips	
			Type			Person	Vehicle
4643	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4643	9700	MIXED USE 75% STREETFRONT	acre		0.1	125.	91.
4643		TOTAL				6031.	3983.
4644	101	SINGLE FAMILY	du		215.0	3354.	2340.
4644	102	MULTI-FAMILY	du		16.0	171.	120.
4644	4112	RIGHT-OF-WAY	acre		8.7	0.	0.
4644	4113	COMMUNICATION OR UTILITY	acre		0.3	1.	1.
4644	5007	STREETFRONT COMMERCIAL	acre		0.1	138.	100.
4644	6102	CHURCH	acre		0.5	28.	21.
4644	6105	FIRE OR POLICE STATION	acre		0.3	104.	77.
4644	6806	ELEMENTARY SCHOOL	acre		1.0	2119.	1185.
4644		TOTAL				5915.	3845.
4645	101	SINGLE FAMILY	du		20.0	312.	218.
4645	4112	RIGHT-OF-WAY	acre		0.5	0.	0.
4645	6102	CHURCH	acre		8.2	439.	337.
4645		TOTAL				751.	555.
4646	5004	NEIGHBORHOOD COMMERCIAL	acre		6.5	9878.	6989.
4646	9700	MIXED USE 75% STREETFRONT	acre		0.6	616.	447.
4646		TOTAL				10494.	7436.
4648	101	SINGLE FAMILY	du		8.0	125.	87.
4648	103	MOBILE HOME PARK	du		178.0	1175.	779.
4648	1501	LOW-RISE HOTEL OR MOTEL	acre		0.6	185.	114.
4648	4112	RIGHT-OF-WAY	acre		6.9	0.	0.
4648	5007	STREETFRONT COMMERCIAL	acre		1.8	2683.	1948.
4648	9700	MIXED USE 75% STREETFRONT	acre		2.1	2041.	1482.
4648		TOTAL				6209.	4410.
4649	101	SINGLE FAMILY	du		41.0	640.	446.
4649	4112	RIGHT-OF-WAY	acre		2.2	0.	0.
4649	4113	COMMUNICATION OR UTILITY	acre		0.2	1.	1.
4649	9101	INACTIVE USE	acre		3.7	0.	0.
4649		TOTAL				641.	447.
4650	101	SINGLE FAMILY	du		99.0	1544.	1078.
4650	4112	RIGHT-OF-WAY	acre		5.8	0.	0.
4650		TOTAL				1544.	1078.
4651	101	SINGLE FAMILY	du		67.0	1045.	729.
4651	4112	RIGHT-OF-WAY	acre		3.8	0.	0.
4651		TOTAL				1045.	729.
4652	101	SINGLE FAMILY	du		12.0	187.	131.
4652	4112	RIGHT-OF-WAY	acre		4.0	0.	0.
4652	5009	OTHER COMMERCIAL	acre		1.3	166.	121.
4652	9700	MIXED USE 75% STREETFRONT	acre		2.5	2465.	1789.
4652		TOTAL				2818.	2041.

CITY OF NATIONAL CITY
GENERAL PLAN UPDATE
TRAFFIC IMPACT TO FREEWAY FACILITIES
TECHNICAL REPORT



Prepared for:

City of National City

Submitted by:

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January 2011



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TRANSPORTATION CONSULTANTS

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1.0 INTRODUCTION

1.1 STUDY BACKGROUND AND PURPOSE

The purpose of this technical report is to document potential significant traffic impacts on regional freeway facilities associated with the City of National City General Plan Update.

The Circulation Element of the General Plan provides a future vision and key direction for achieving the development of a truly multi-modal transportation system serving all the citizens of the City of National City. The current Circulation Element for the City of National City was prepared in 1996 and has been the subject of various modifications over the years. The current update effort provides the opportunity to review past accomplishments and refocus efforts to effectively plan a balanced transportation system.

This Element seeks to assure that the City's circulation system provides for the effective movement of people and goods in and around the City while giving strong consideration to non-single-occupant-vehicle (SOV) forms of transportation including bikes, pedestrians and transit. To achieve this, the Circulation Element utilizes a multi-modal/whole-systems approach to circulation planning.

1.2 PROJECT STUDY AREA AND SCENARIOS

Regional freeway facilities (Interstate 5, Interstate 805, and State Route 54) within National City were analyzed and compared under each of the following three (3) scenarios:

- Existing Conditions – This alternative includes existing (year 2010) traffic volumes on the respective freeway segments as currently constructed.
- Adopted General Plan (No Project) – This scenario includes land uses and roadway network consistent with the buildout of the currently adopted City of National City General Plan.
- Proposed General Plan Update (Proposed Project) – This scenario includes land uses and roadway network consistent with the proposed City of National City General Plan Update.

1.3 REPORT ORGANIZATION

Following this Introduction chapter, this report is organized into the following sections:

- 2.0 Approach and Methodology – This chapter describes the methodologies and standards utilized to analyze traffic conditions in the regional freeway system.
- 3.0 Existing Conditions – This chapter provides results of the analysis of existing traffic conditions for the identified freeway facilities.
- 4.0 Future Traffic Conditions – This chapter describes future year buildout traffic conditions on the identified freeway facilities under both the City of National City Adopted General Plan and the City of National City Proposed General Plan Update.
- 5.0 Comparison Assessments – This chapter provides a comparison of traffic operations on the regional freeway facilities under the three analysis scenarios and identifies potential significant impacts associated with the proposed City of National City General Plan Update.
- 6.0 Summary of Findings – This chapter summarizes the analysis results included traffic impacts on the regional freeway system under the analyzed scenarios.

2.0 APPROACH AND METHODOLOGY

2.1 ANALYSIS METHODOLOGY

Detailed information on the freeway segment analysis methodologies, standards, and thresholds are discussed in the following section.

2.1.1 Level of Service Definitions

The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort, convenience, and safety. **Table 2.1** describes generalized definitions of LOS in transportation systems.

TABLE 2.1
LEVEL OF SERVICE DEFINITIONS

LOS Category	Definition of Operation
A	This LOS represents a completely free-flow condition, where the operation of vehicles is virtually unaffected by the presence of other vehicles and only constrained by the geometric features of the highway and by driver preferences.
B	This LOS represents a relatively free-flow condition, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.
C	At this LOS the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles.
D	At this LOS, the ability to maneuver is notably restricted due to traffic congestion, and only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	This LOS represents operations at or near capacity. LOS E is an unstable level, with vehicles operating with minimum spacing for maintaining uniform flow. At LOS E, disruptions cannot be dissipated readily thus causing deterioration down to LOS F.
F	At this LOS, forced or breakdown of traffic flow occurs, although operations appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.

Source: Highway Capacity Manual 2000

2.1.2 Freeway Level of Service Standards and Thresholds

Freeway LOS and performance is based on procedures derived from the 2000 *Highway Capacity Manual* (HCM 2000) (Transportation Research Board, 2000). The procedure for calculating LOS involves estimating a peak hour volume-to-capacity (V/C) ratio and comparison to acceptable ranges of V/C values corresponding to the various Levels of Service, as shown in **Table 2.2**. The corresponding LOS represents an approximation of existing or anticipated future peak hour operating conditions in the peak direction of travel. As stated in the Caltrans' Guide for the preparation of Traffic Impact Studies, Caltrans endeavors to maintain a goal of LOS C on regional freeway facilities. However, Caltrans acknowledges that this may not always be feasible. In these circumstances, Caltrans often accepts lower LOS on facilities that are currently operating below the LOS C objective.

TABLE 2.2
CALTRANS DISTRICT 11
FREEWAY SEGMENT LEVEL OF SERVICE DEFINITIONS

LOS	V/C	Congestion/Delay	Traffic Description
"A"	<0.30	None	Free flow.
"B"	0.30-0.49	None	Free to stable flow, light to moderate volumes.
"C"	0.50-0.70	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	0.71-0.88	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	0.89-0.99	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
"F"	>1.00	Considerable	Forced or breakdown flow. Delay measured in average travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle.

Source: 2000 Highway Capacity Manual

2.2 IMPACT SIGNIFICANCE CRITERIA

Caltrans utilizes the *SANTEC/ITE Guidelines for Traffic Impact Studies (TIS) in the San Diego Region* as the basis for defining project impacts. In general, a significant impact would be identified when the addition of project traffic results in a Level of Service dropping from LOS D or better to substandard LOS E or F. In addition, **Table 2.3** summarizes the impact significance thresholds for facilities operating at substandard LOS (LOS E or F) with and without the project. These thresholds as applied to freeway segments are based upon an acceptable increase in the V/C ratio.

TABLE 2.3
SANTEC / ITE
MEASURES OF SIGNIFICANT PROJECT TRAFFIC IMPACTS

LOS with Project	Allowable Change Due to Impact					
E & F (or ramp meter delays above 15 min.)	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec)	Delay (min.)
	0.01	1	0.02	1	2	2

Source: SANTEC/CMP Guidelines for Traffic Impact Studies (TIS) in the San Diego Region

3.0 EXISTING CONDITIONS

This section provides an assessment of freeway performance in terms of operating conditions and LOS under Existing Conditions.

3.1 FREEWAY NETWORK AND VOLUMES

A total of seventeen (17) regional freeway segments were identified for analysis within the City of National City. The existing freeway cross-sections are consistent with current freeway lane configurations. The Average Daily Traffic (ADT) volumes on these freeway facilities were obtained / derived from Caltrans Freeway Performance Measurement System (PeMS).

3.2 FREEWAY PERFORMANCE

Table 3.1 displays existing freeway cross-sections, the existing average daily traffic volume (ADT), and the corresponding V/C ratio & LOS for the identified freeway facilities. As shown, ten (10) out of seventeen (17) analyzed freeway segments are currently operating at substandard LOS E or F under Existing conditions.

TABLE 3.1
FREEWAY SEGMENTS LEVEL OF SERVICE
EXISTING CONDITIONS

Freeway	Segment	ADT	Peak Hour %	Peak Hour Volume	Directional Split	# of Lanes per Direction	PHF	% HV	Volume (pc/h/ln)	V/C	LOS
I-5	Northern City Limit/Division Street to 8th Street	154,400	8.5%	13,100	0.51	4	0.92	4.60%	1,900	0.79	D
	8th Street to Civic Center Drive	172,100	8.5%	14,600	0.51	4	0.92	4.60%	2,100	0.88	D
	Civic Center Drive to 18th Street	172,100	8.5%	14,600	0.52	4	0.92	4.60%	2,200	0.92	E
	18th Street to Mile of Cars Way	172,100	8.5%	14,600	0.51	5	0.92	4.60%	1,700	0.71	C
	Mile of Cars Way to SR-54 WB Ramps	151,000	8.5%	12,800	0.51	5	0.92	4.60%	1,500	0.63	C
	SR-54 WB Ramps to SR-54 EB Ramps	121,700	8.5%	10,300	0.51	5	0.92	4.60%	1,200	0.50	C
I-805	SR-54 EB Ramps to Southern City Limit	149,500	8.5%	12,700	0.50	4	0.92	4.60%	1,800	0.75	D
	Northern City Limit to Palm Avenue	194,500	9.0%	17,500	0.52	4	0.92	6.40%	2,600	1.08	F
	Palm Avenue to East Plaza Boulevard	182,100	9.0%	16,400	0.52	5	0.92	6.40%	2,000	0.83	D
	East Plaza Boulevard to Sweetwater Road	165,100	9.0%	14,900	0.51	4	0.92	6.40%	2,200	0.92	E
	Sweetwater Road to SR-54 WB Ramps	171,900	9.0%	15,500	0.51	4	0.92	6.40%	2,300	0.96	E
	SR-54 WB Ramps to SR-54 EB Ramps	171,900	9.0%	15,500	0.55	4	0.92	6.40%	2,500	1.04	F
SR-54	SR-54 EB Ramps to Southern City Limit	224,500	9.0%	20,200	0.50	4	0.92	6.40%	2,900	1.21	F
	I-5 to Highland Avenue	96,100	10.4%	10,000	0.52	3	0.92	6.30%	2,000	0.95	E
	Highland Avenue to I-805 SB Ramps	106,900	10.4%	11,100	0.54	3	0.92	6.30%	2,300	1.10	F
	I-805 SB Ramps to Plaza Bonita Center Way	118,400	10.4%	12,300	0.50	3	0.92	6.30%	2,400	1.14	F
	Plaza Bonita Center Way to Eastern City Limit	107,700	10.4%	11,200	0.50	3	0.92	6.30%	2,200	1.05	F

Note:

Bold letter indicates unacceptable LOS E or F.

Source: Fehr & Peers; January 2010

4.0 FUTURE TRAFFIC CONDITIONS

This section describes the future year freeway performance in terms of operating conditions and LOS under buildout of the City of National City adopted General Plan and proposed General Plan Update.

4.1 ADOPTED CITY OF NATIONAL CITY GENERAL PLAN

The adopted City of National City General Plan represents the no-project condition, and includes land uses and roadway network characteristics in the City of National City consistent with the currently adopted Circulation Element.

4.1.1 Freeway Network and Volumes

The future year freeway cross-sections are consistent with the SANDAG 2030 Regional Transportation Plan (RTP) “reasonably expected improvements with mobility emphasis.” The average daily traffic volumes were derived from the SANDAG Series 11 Southbay III traffic model forecast for the City of National City General Plan Update (adopted General Plan scenario).

4.1.2 Freeway Performance

Table 4.1 displays the future year freeway cross-sections, the 2030 forecast average daily traffic volumes, and the corresponding V/C and LOS assuming buildout of the adopted City of National City General Plan. As shown, sixteen (16) out of the seventeen (17) analyzed freeway segments would operate at substandard LOS E or F under future year buildout of the Adopted City of National City General Plan.

4.2 PROPOSED PROJECT (PROPOSED GENERAL PLAN UPDATE)

The proposed City of National City General Plan represents the “base plus project” condition, and includes land uses and roadway network characteristics in the City of National City consistent with the proposed Circulation Element Update.

4.2.1 Freeway Network and Volumes

The future year freeway cross-sections are also consistent with the SANDAG 2030 Regional Transportation Plan (RTP) “reasonably expected improvements with mobility emphasis”. The average daily traffic volumes were derived from the SANDAG Series 11 South III traffic model forecast for the City of National City General Plan Update (proposed General Plan) traffic.

4.2.2 Freeway Performance

Table 4.2 displays the assumed future year freeway cross-sections, the 2030 forecast average daily traffic volumes, and the corresponding V/C & LOS assuming buildout of the proposed General Plan. As shown, sixteen (16) out of the seventeen (17) analyzed freeway segments would operate at substandard LOS E or F under future year buildout of the proposed City of National City General Plan.

TABLE 4.1
FREEWAY SEGMENT LEVEL OF SERVICE
ADOPTED GENERAL PLAN

Freeway	Segment	ADT	Peak Hour %	Peak Hour Volume	Directional Split	# of Lanes per Direction	PHF	% HV	Volume (pc/h/ln)	V/C	LOS
I-5	Northern City Limit/Division Street to 8th Street	255,900	8.5%	21,800	0.54	4	0.92	4.60%	3,400	1.42	F
	8th Street to Civic Center Drive	242,400	8.5%	20,600	0.55	4	0.92	4.60%	3,200	1.33	F
	Civic Center Drive to 18th Street	216,700	8.5%	18,400	0.52	4	0.92	4.60%	2,700	1.13	F
	18th Street to Mile of Cars Way	234,600	8.5%	19,900	0.51	5	0.92	4.60%	2,300	0.96	E
	Mile of Cars Way to SR-54 WB Ramps	251,000	8.5%	21,300	0.52	5	0.92	4.60%	2,500	1.04	F
	SR-54 WB Ramps to SR-54 EB Ramps	181,300	8.5%	15,400	0.51	5	0.92	4.60%	1,800	0.75	D
I-805	SR-54 EB Ramps to Southern City Limit	174,300	8.5%	14,800	0.56	4	0.92	4.60%	2,400	1.00	F
	Northern City Limit to Palm Avenue	245,100	9.0%	22,100	0.53	4	0.92	6.40%	3,400	1.42	F
	Palm Avenue to East Plaza Boulevard	254,900	9.0%	22,900	0.50	5	0.92	6.40%	2,700	1.13	F
	East Plaza Boulevard to Sweetwater Road	241,500	9.0%	21,700	0.51	4	0.92	6.40%	3,200	1.33	F
	Sweetwater Road to SR-54 WB Ramps	211,700	9.0%	19,100	0.52	4	0.92	6.40%	2,900	1.21	F
	SR-54 WB Ramps to SR-54 EB Ramps	206,900	9.0%	18,600	0.55	4	0.92	6.40%	3,000	1.25	F
SR-54	SR-54 EB Ramps to Southern City Limit	291,000	9.0%	26,200	0.50	4	0.92	6.40%	3,800	1.58	F
	I-5 to Highland Avenue	112,300	10.4%	11,700	0.56	3	0.92	6.30%	2,500	1.19	F
	Highland Avenue to I-805 SB Ramps	130,500	10.4%	13,600	0.52	3	0.92	6.30%	2,700	1.29	F
	I-805 SB Ramps to Plaza Bonita Center Way	139,200	10.4%	14,500	0.51	3	0.92	6.30%	2,900	1.38	F
	Plaza Bonita Center Way to Eastern City Limit	126,100	10.4%	13,100	0.51	3	0.92	6.30%	2,600	1.24	F

Source: Fehr & Peers, January 2010

Note:
Bold letter indicates unacceptable LOS E or F.

TABLE 4.2
FREEWAY LEVEL OF SERVICE
CITY OF NATIONAL CITY
PROPOSED GENERAL PLAN

Freeway	Segment	ADT	Peak Hour %	Peak Hour Volume	Directional Split	# of Lanes per Direction	PHF	% HV	Volume (pc/h/ln)	V/C	LOS
I-5	Northern City Limit/Division Street to 8th Street	259,100	8.5%	22,000	0.54	4	0.92	4.60%	3,400	1.42	F
	8th Street to Civic Center Drive	245,400	8.5%	20,900	0.55	4	0.92	4.60%	3,300	1.38	F
	Civic Center Drive to 18th Street	215,900	8.5%	18,400	0.52	4	0.92	4.60%	2,700	1.13	F
	18th Street to Mile of Cars Way	233,000	8.5%	19,800	0.51	5	0.92	4.60%	2,300	0.96	E
	Mile of Cars Way to SR-54 WB Ramps	253,800	8.5%	21,600	0.51	5	0.92	4.60%	2,500	1.04	F
	SR-54 WB Ramps to SR-54 EB Ramps	183,100	8.5%	15,600	0.51	5	0.92	4.60%	1,800	0.75	D
	SR-54 EB Ramps to Southern City Limit	176,000	8.5%	15,000	0.56	4	0.92	4.60%	2,400	1.00	F
I-805	Northern City Limit to Palm Avenue	244,200	9.0%	22,000	0.53	4	0.92	6.40%	3,400	1.42	F
	Palm Avenue to East Plaza Boulevard	253,600	9.0%	22,800	0.50	5	0.92	6.40%	2,600	1.08	F
	East Plaza Boulevard to Sweetwater Road	240,800	9.0%	21,700	0.51	4	0.92	6.40%	3,200	1.33	F
	Sweetwater Road to SR-54 WB Ramps	210,100	9.0%	18,900	0.51	4	0.92	6.40%	2,800	1.17	F
	SR-54 WB Ramps to SR-54 EB Ramps	207,500	9.0%	18,700	0.55	4	0.92	6.40%	3,000	1.25	F
	SR-54 EB Ramps to Southern City Limit	291,800	9.0%	26,300	0.50	4	0.92	6.40%	3,800	1.58	F
	I-5 to Highland Avenue	113,900	10.4%	11,800	0.56	3	0.92	6.30%	2,600	1.24	F
SR-54	Highland Avenue to I-805 SB Ramps	132,600	10.4%	13,800	0.52	3	0.92	6.30%	2,800	1.33	F
	I-805 SB Ramps to Plaza Bonita Center Way	139,700	10.4%	14,500	0.51	3	0.92	6.30%	2,900	1.38	F
	Plaza Bonita Center Way to Eastern City Limit	126,500	10.4%	13,200	0.51	3	0.92	6.30%	2,600	1.24	F

Source: Fehr & Peers, January 2010

Note:
Bold letter indicates unacceptable LOS E or F.

5.0 IDENTIFICATION OF SIGNIFICANT IMPACTS

This section documents significant impacts on the analyzed regional freeway segments that would result from buildout of the proposed City of National City General Plan Update. Utilizing the methodologies outlined in Section 2.2, the following comparisons were made for purposes of determining significant traffic impacts:

- Adopted City of National City to Existing Conditions (Adopted Plan to Ground) – This comparison provides a baseline scenario indicating impacts on the freeway facilities under buildout of the currently adopted City of National City General Plan.
- Proposed City of National City General Plan to Existing Conditions (Proposed Plan to Ground) – This comparison provides the basis for identifying significant impacts associated with future year buildout of the proposed City of National City General Plan Update.
- Proposed City of National City General Plan to Adopted General Plan (Proposed Plan to Adopted Plan) – This comparison provides the basis for identifying new significant impacts that would result with the proposed City of National City General Plan Update.

5.1 COMPARISON OF EXISTING CITY OF NATIONAL CITY GENERAL PLAN TO EXISTING CONDITIONS

Table 5.1 compares projected freeway performance under the buildout of the City of National City Adopted General Plan to Existing Conditions, and displays the resulting significant impacts.

**TABLE 5.1
SIGNIFICANT TRAFFIC IMPACTS
ADOPTED GENERAL PLAN VS. EXISTING CONDITIONS
(ADOPTED PLAN TO GROUND)**

Freeway	Segment	Existing			Adopted GP			Δ in V/C	Significant Impact?
		ADT	V/C	LOS	ADT	V/C	LOS		
I-5	Northern City Limit/Division Street to 8th Street	154,400	0.79	D	255,900	1.42	F	0.63	Yes
	8th Street to Civic Center Drive	172,100	0.88	D	242,400	1.33	F	0.46	Yes
	Civic Center Drive to 18th Street	172,100	0.92	E	216,700	1.13	F	0.21	Yes
	18th Street to Mile of Cars Way	172,100	0.71	C	234,600	0.96	E	0.25	Yes
	Mile of Cars Way to SR-54 WB Ramps	151,000	0.63	C	251,000	1.04	F	0.42	Yes
	SR-54 WB Ramps to SR-54 EB Ramps	121,700	0.50	C	181,300	0.75	D	0.25	No
	SR-54 EB Ramps to Southern City Limit	149,500	0.75	D	174,300	1.00	F	0.25	Yes
I-805	Northern City Limit to Palm Avenue	194,500	1.08	F	245,100	1.42	F	0.33	Yes
	Palm Avenue to East Plaza Boulevard	182,100	0.83	D	254,900	1.13	F	0.29	Yes
	East Plaza Boulevard to Sweetwater Road	165,100	0.92	E	241,500	1.33	F	0.42	Yes
	Sweetwater Road to SR-54 WB Ramps	171,900	0.96	E	211,700	1.21	F	0.25	Yes
	SR-54 WB Ramps to SR-54 EB Ramps	171,900	1.04	F	206,900	1.25	F	0.21	Yes
	SR-54 EB Ramps to Southern City Limit	224,500	1.21	F	291,000	1.58	F	0.38	Yes
SR-54	I-5 to Highland Avenue	96,100	0.95	E	112,300	1.19	F	0.24	Yes
	Highland Avenue to I-805 SB Ramps	106,900	1.10	F	130,500	1.29	F	0.19	Yes
	I-805 SB Ramps to Plaza Bonita Center Way	118,400	1.14	F	139,200	1.38	F	0.24	Yes
	Plaza Bonita Center Way to Eastern City Limit	107,700	1.05	F	126,100	1.24	F	0.19	Yes

Source: Fehr & Peers, January 2010

Notes:

Bold letter indicates unacceptable LOS E or F.

Δ in V/C = The change in the volume to capacity ratio between the two scenarios.

As shown, the following sixteen (16) freeway segments are identified as being significantly impacted when comparing the buildout of the City of National City Adopted General Plan to Existing Conditions:

- I-5, from Northern City Limit/Division Street to 8th Street
- I-5, 8th Street to Civic Center Drive
- I-5, Civic Center Drive to 18th Street 18th Street to Mile of Cars Way
- I-5, Mile of Cars Way to SR-54 WB Ramps
- I-5, SR-54 EB Ramps to Southern City Limit
- I-805, Northern City Limit to Palm Avenue
- I-805, Palm Avenue to East Plaza Boulevard
- I-805, East Plaza Boulevard to Sweetwater Road
- I-805, Sweetwater Road to SR-54 WB Ramps
- I-805, SR-54 WB Ramps to SR-54 EB Ramps
- I-805, SR-54 EB Ramps to Southern City Limit
- SR-54, I-5 to Highland Avenue
- SR-54, Highland Avenue to I-805 SB Ramps
- SR-54, I-805 NB Ramps to Plaza Bonita Center Way
- SR-54, Plaza Bonita Center Way to Eastern City Limit

5.2 COMPARISON OF PROPOSED CITY OF NATIONAL CITY GENERAL PLAN TO EXISTING CONDITIONS

Table 5.2 compares projected freeway performance under the proposed City of National City General Plan to Existing Conditions, and displays the resulting significant impacts.

**TABLE 5.2
SIGNIFICANT TRAFFIC IMPACTS
GENERAL PLAN UPDATE VS. EXISTING CONDITIONS
(PROPOSED PLAN TO GROUND)**

Freeway	Segment	Existing			Proposed GP			Δ in V/C	Significant Impact?
		ADT	V/C	LOS	ADT	V/C	LOS		
I-5	Northern City Limit/Division Street to 8th Street	154,400	0.79	D	259,100	1.42	F	0.63	Yes
	8th Street to Civic Center Drive	172,100	0.88	D	245,400	1.38	F	0.50	Yes
	Civic Center Drive to 18th Street	172,100	0.92	E	215,900	1.13	F	0.21	Yes
	18th Street to Mile of Cars Way	172,100	0.71	C	233,000	0.96	E	0.25	Yes
	Mile of Cars Way to SR-54 WB Ramps	151,000	0.63	C	253,800	1.04	F	0.42	Yes
	SR-54 WB Ramps to SR-54 EB Ramps	121,700	0.50	C	183,100	0.75	D	0.25	No
	SR-54 EB Ramps to Southern City Limit	149,500	0.75	D	176,000	1.00	F	0.25	Yes
I-805	Northern City Limit to Palm Avenue	194,500	1.08	F	244,200	1.42	F	0.33	Yes
	Palm Avenue to East Plaza Boulevard	182,100	0.83	D	253,600	1.08	F	0.25	Yes
	East Plaza Boulevard to Sweetwater Road	165,100	0.92	E	240,800	1.33	F	0.42	Yes
	Sweetwater Road to SR-54 WB Ramps	171,900	0.96	E	210,100	1.17	F	0.21	Yes
	SR-54 WB Ramps to SR-54 EB Ramps	171,900	1.04	F	207,500	1.25	F	0.21	Yes
	SR-54 EB Ramps to Southern City Limit	224,500	1.21	F	291,800	1.58	F	0.38	Yes
SR-54	I-5 to Highland Avenue	96,100	0.95	E	113,900	1.24	F	0.29	Yes
	Highland Avenue to I-805 SB Ramps	106,900	1.10	F	132,600	1.33	F	0.24	Yes
	I-805 NB Ramps to Plaza Bonita Center Way	118,400	1.14	F	139,700	1.38	F	0.24	Yes
	Plaza Bonita Center Way to Eastern City Limit	107,700	1.05	F	126,500	1.24	F	0.19	Yes

Source: Fehr & Peers, January 2011

Notes:

Bold letter indicates unacceptable LOS E or F.

Δ in V/C = The change in the volume-to-capacity ratio between the two scenarios.

As shown, the following sixteen (16) freeway segments would be significantly impacted when comparing the buildout of the proposed City of National City General Plan to Existing conditions:

- I-5, from Northern City Limit/Division Street to 8th Street
- I-5, 8th Street to Civic Center Drive
- I-5, Civic Center Drive to 18th Street 18th Street to Mile of Cars Way
- I-5, Mile of Cars Way to SR-54 WB Ramps
- I-5, SR-54 EB Ramps to Southern City Limit
- I-805, Northern City Limit to Palm Avenue
- I-805, Palm Avenue to East Plaza Boulevard
- I-805, East Plaza Boulevard to Sweetwater Road
- I-805, Sweetwater Road to SR-54 WB Ramps
- I-805, SR-54 WB Ramps to SR-54 EB Ramps
- I-805, SR-54 EB Ramps to Southern City Limit
- SR-54, I-5 to Highland Avenue
- SR-54, Highland Avenue to I-805 SB Ramps
- SR-54, I-805 NB Ramps to Plaza Bonita Center Way
- SR-54, Plaza Bonita Center Way to Eastern City Limit

5.3 COMPARISON OF PROPOSED CITY OF NATIONAL CITY GENERAL PLAN TO ADOPTED CITY OF NATIONAL CITY GENERAL PLAN

Table 5.3 compares projected freeway performance under the proposed City of National City General Plan to the freeway performance under the Adopted City of National City General Plan, and displays the resulting significant impacts.

**TABLE 5.3
SIGNIFICANT TRAFFIC IMPACTS
GENERAL PLAN UPDATE VS. ADOPTED GENERAL PLAN**

Freeway	Segment	Adopted GP			Proposed GP			Δ in V/C	Significant Impact?
		ADT	V/C	LOS	ADT	V/C	LOS		
I-5	Northern City Limit/Division Street to 8th Street	255,900	1.42	F	259,100	1.42	F	0.00	No
	8th Street to Civic Center Drive	242,400	1.33	F	245,400	1.38	F	0.04	Yes
	Civic Center Drive to 18th Street	216,700	1.13	F	215,900	1.13	F	0.00	No
	18th Street to Mile of Cars Way	234,600	0.96	E	233,000	0.96	E	0.00	No
	Mile of Cars Way to SR-54 WB Ramps	251,000	1.04	F	253,800	1.04	F	0.00	No
	SR-54 WB Ramps to SR-54 EB Ramps	181,300	0.75	D	183,100	0.75	D	0.00	No
	SR-54 EB Ramps to Southern City Limit	174,300	1.00	F	176,000	1.00	F	0.00	No
I-805	Northern City Limit to Palm Avenue	245,100	1.42	F	244,200	1.42	F	0.00	No
	Palm Avenue to East Plaza Boulevard	254,900	1.13	F	253,600	1.08	F	-0.04	No
	East Plaza Boulevard to Sweetwater Road	241,500	1.33	F	240,800	1.33	F	0.00	No
	Sweetwater Road to SR-54 WB Ramps	211,700	1.21	F	210,100	1.17	F	-0.04	No
	SR-54 WB Ramps to SR-54 EB Ramps	206,900	1.25	F	207,500	1.25	F	0.00	No
	SR-54 EB Ramps to Southern City Limit	291,000	1.58	F	291,800	1.58	F	0.00	No
SR-54	I-5 to Highland Avenue	112,300	1.19	F	113,900	1.24	F	0.05	Yes
	Highland Avenue to I-805 SB Ramps	130,500	1.29	F	132,600	1.33	F	0.05	Yes
	I-805 SB Ramps to Plaza Bonita Center Way	139,200	1.38	F	139,700	1.38	F	0.00	No
	Plaza Bonita Center Way to Eastern City Limit	126,100	1.24	F	126,500	1.24	F	0.00	No

Source: Fehr & Peers, January 2011

Notes:

Bold letters indicate substandard LOS.

Δ in V/C = The change in the volume to capacity ratio between the two scenarios.

As shown, the following three (3) freeway segments would be significantly impacted based upon the comparison of the City's proposed General Plan to the currently adopted General Plan:

- I-5, 8th Street to Civic Center Drive
- SR-54, I-5 to Highland Avenue
- SR-54, Highland Avenue to I-805 SB Ramps

5.4 MITIGATION OF SIGNIFICANT IMPACTS

Mitigation of the identified significant traffic impacts would require a variety of options from freeway segment widenings to spot improvements (adding HOV lane, manage lane, etc). As regional-serving freeways, impacts are cumulative in nature and would require regional level improvements consistent with SANDAG and Caltrans plans.